FRY'S PURE CONCENTRATED COCOA.

THE PRACTICAL TEACHER

THE LATE MISS FLORA C. STEVENSON

CONTENTS

OF THE

NOVEMBER NUMBER

	PAGE
THE UNPRACTICAL TEACHER AT THE LATTICE. By J. H. Yoxall	223
WITH THE BRITISH ASSOCIATION: CAPE TOWN	225
BY MANY HANDS	227
N.U.T. NOTES	228
NOTES FROM THE NORTH	230
THE LATE REV. T. W. SHARPE, C.B.	232
THE LATE MISS FLORA CLIFT STEVENSON, LL.D.	233
PYGMY RACES	235
OPENING OF A NEW TRAINING COLLEGE	237
A GLIMPSE OF NEW ENGLAND	238
EDUCATION IN FOREIGN LANDS	242
MR. ALFRED D. G. BARRIBALL, B.A.	243
NATURE NOTES FOR THE MONTH: THE NATURALIST IN LEADENHALL MARKET. By P. Horn	245
AUTUMN LESSONS FOR TEACHERS AND SCHOLARS. By S. M. Rodgers	247
NOTES OF LESSONS ON THE NOVEMBER SKY	249
OUR ILLUSTRATED GEOGRAPHICAL NOTE-BOOK: INDIA—PAST AND PRESENT	252
THE INSPECTOR'S NOTE-BOOK	254
REGULATIONS FOR SECONDARY SCHOOLS	256
ENCOURAGEMENT OF EVENING SCHOOLS	258
ACTION SONG FOR BABIES (Words and Music)	259
FRENCH PRIZE COMPETITION	260
FRENCH AND GERMAN ASSISTANTS FOR ENGLISH SECONDARY SCHOOLS	261
OUR PUPIL TEACHERS' AND SCHOLARSHIP COURSE. By A. T. Flux	262
OUR CERTIFICATE COURSE FOR 1906. By George Collar	266
CHEMISTRY. By C. A. West	270
PHYSIOGRAPHY	271
MATHEMATICS. By Frank Castle	272
OUR QUERY COLUMN	274
THE EDITOR'S TABLE	276

·VOL· XXVI No 5

EDITORIAL, PUBLISHING AND ADVERTISING OFFICES OF "THE PRACTICAL TEACHER"
T. NELSON & SONS, 35 and 36 Paternoster Row, London, E.C.
EDINBURGH, DUBLIN, and NEW YORK

PRICE 6D.

NELSON'S SIXPENNY CLASSICS. Large Type. Good Paper. Bound in Cloth. See page xiv.

DIPLOMA

CORRESPONDENCE COLLEGE.

Principal.
J. W. KNIPE, L.C.P. (Double Hons.), F.R.S.L.

Vice-Principal.
S. H. HOOKE, B.A. Lond. (1st in Hons.).

Directors of Study.

Arts .. .. S. H. HOOKE, B.A.
Science .. .. E. E. ELY, B.Sc.
Laws .. .. B. JACOBS, LL.B.
Divinity .. .. .. Rev. R. MOORE, B.A., B.D.
Music .. .. F. MERRICK, Mus.D.

Tutors.

By whom all Courses are drawn up and all Students' Papers corrected.

ARTS.

J. N. FRANKLAND, B.A. (Camb.), M.Sc. (Vic.).
E. FRIBBY, M.A. (Lond.).
S. H. HOOKE, B.A. (Lond.).
R. A. JONES, M.A. (Lond.).
E. S. LONGHURST, M.A. (Camb.), B.A. (Lond.).
J. KERGAN, M.A. (Vic.).
W. A. MASON, M.A. (Lond.).
A. E. POPE, M.A. (Camb.).
D. J. THOMAS, B.A. (Wales).

SCIENCE.

F. S. DAWE, M.D. (Lond.), B.Sc. (Lond.).
E. E. ELY, B.Sc. (Lond.).
W. HALLIWELL, B.Sc. (Lond.), L.C.P.
E. W. HEATON, B.Sc. (Lond.), F.G.S.
G. W. JONES, B.Sc. (Lond.).
J. H. NIGHTINGALE, B.Sc. (Lond.).
J. H. REEVES, B.A., B.Sc. (Lond.).
J. THOMAS, B.Sc. (Lond.), A.R.C.Sc.

DIVINITY.

Rev. Professor R. MOORE, B.A. (Oxon.), B.D. (Edin.).
Rev. J. G. BERRY, M.A., B.D. (Edin.).
Rev. T. PULLAR, M.A., B.D. (Edin.).
Rev. J. MOORHEAD, B.A., B.D. (Edin.).
Rev. S. HOLBROOKE, M.A. (Oxon.).
Prof. E. NORMAN JONES, M.A. (Oxon.).

MUSIC.

W. HARRISON, M.A., Mus.Bac. (Oxon.).
F. MERRICK, Mus.D. (Dub.), L.R.A.M.

LAWS.

Tutors of the London School of Law, to which the Legal Department of D.C.C. is affiliated.
B. JACOBS, LL.B.
E. A. FARLEIGH, LL.B.
C. M. KNOWLES, LL.B.
A. P. POLEY, B.A.

SECRETARY.

P. R. KNIPE.

POSTAL TUITION FOR ALL

LONDON DEGREES.

A NEW DEPARTURE

in Correspondence Tuition. One Fee (payable in instalments) covers tuition for all three Exams. (Matric., Inter., Final), for either

B.A., B.Sc., B.D.

GUARANTEE.

Under this system we undertake to coach the Student, irrespective of failure at any of the Exams., without further payment, until he has obtained his Degree. A Guarantee, signed by the Principal, is sent to each student.

AT INTER. ARTS & SCIENCE, JULY 1905,
EVERY D.C.C. STUDENT PASSED.

Testimonials from successful Students will be sent on application.

That D.C.C. Courses are on the right lines is proved by the fact that we had

NO FAILURES.

FREE MATRICULATION GUIDE

And Free Guides to Inter. and Final B.A., B.Sc., B.D., with Prospectus of Courses, post free from the

REGISTRAR, DIP. CORR. COLL., ALDINE CHAMBERS, PATERNOSTER ROW, LONDON, E.C.

THE

PRACTICAL TEACHER

A MONTHLY MAGAZINE AND REVIEW

FOR THE SCHOOL-ROOM AND THE STUDY

Vol. XXVI. No. 5. NOVEMBER, 1905. Price 6d.

NOTICES TO CORRESPONDENTS AND SUBSCRIBERS.

"The Practical Teacher" may be ordered of any Newsagent or Bookseller, or at any Bookstall, in the United Kingdom or in the Colonies. Supplies are sent monthly to the chief towns in Australasia, South Africa, and India.

London Office: 35 and 36 Paternoster Row.
Edinburgh Office: Parkside Works.
Dublin Office: 17 Talbot Street.
New York Office: 37 East 18th Street.
Paris: W. H. Smith and Son, 248 Rue de Rivoli.

Subscribers may obtain "The Practical Teacher," post free, from the Publishers at the following terms:—

United Kingdom, Continent, Colonies, and United States } 12 Months, 8/- 6 Months, 4/-

All literary communications should be addressed to the Editor, Office of "The Practical Teacher," 35 and 36 Paternoster Row, London, E.C.

Remittances, Cheques, Post-Office Orders, etc., should be made payable to Thomas Nelson and Sons. Advertisement rates on application.

THE UNPRACTICAL TEACHER AT THE LATTICE.

BY J. H. YOXALL

"THE oriel" Miss Rosanna called the window when she spoke of it to the pupils or the parents, but "the lattice" was what she called it to herself. "The lattice" was a more homely form of the romantic, she thought; though an "oriel" the window was, without a doubt. In a high, weak voice Miss Rosanna would sometimes sing, to the tall pianoforte with the red rep front, a mid-Victorian ballad named "The Maid at the Lattice"; Miss Rosanna had been a maid at the lattice for nearly thirty years.

"The lattice" looked out upon the Green of a decayed old Georgian suburb now surrounded by part of the outer radius of London. "The lattice" looked out over the front walk, the green gate, and the brass plate that genteelly indicated the genteel old house to be a genteel Young Ladies' School. When the eleven very young ladies were gone home at the end of afternoon study, and Miss Rosanna had carried up her mother's tea, the old maid would sit at the lattice, cup in hand, and look out upon the Green. Often the tea in the cup would get cold while Miss Rosanna looked out, for if sometimes she looked out into the present and saw the Green, more often she looked from the lattice into the past, and saw again, dimly, as if they were ghosts in shrouds, the past years, the vanished years; the years that one by one had diminished the number of young ladies who attended the genteel school; the years that bit by bit had robbed Miss Rosanna of youth and hope; and the year that had robbed her of love.

Sometimes, when Miss Rosanna was regarding the Green and the present, she would see Miss B. N. Little, L.L.A., and Miss Marion Polter, B.A.(Lond.) come crossing the Green from the Council Secondary School for Girls towards their lodgings. At the sight of Miss B. N. Little, L.L.A., and Miss Marion Polter, B.A.(Lond.), Miss Rosanna would pinch up her thin lips and elevate her thin nose, in about the nearest sentiment to hatred and contempt that the gentle, elderly soul of Miss Rosanna could achieve. Miss B. N. Little, L.L.A. and Miss Marion Polter, B.A., represented the march of civilisation, and Miss Rosanna felt that she herself did not. In the bygone years the horrid Board Schools had drained away many pupils from Oriel House School for Young Ladies, and now the new Council Secondary School for Girls was likely to drain away the rest. "I am afraid I don't like those young women, dear!" Miss Rosanna would say to her student-teacher, of Miss Little and Miss Polter, now and then. "I'm afraid I must confess that I actually feel dislike to them, dear. They are very clever, no doubt, and I suppose they are quite what are called practical teachers, but I don't think they are exactly ladies, dear, do you? I have only spoken to them once, but ——" The once was when they had called on Miss Rosanna to ask her to join several tiresome institutions and societies. "Miss Polter wished me to join what she called the Childhood Association, and the other one actually wanted me to become a member of that dreadful thing they call the N.U.T.!"

Miss Rosanna was careful not to sit so near the lattice as to be visible through it to persons who crossed the Green. Persons whom Miss Rosanna did not wish to salute might have saluted her if she had been visible at the lattice, and the more genteel persons whom Miss Rosanna did wish to salute at proper opportunities might have thought it unladylike of Miss Rosanna to sit near a window at all, even an "oriel" window. Miss Rosanna was very tender and particular about her ladyhood. Her father (the man with the watery eyes and pink nose who used to take the two-and-eightpences from people who went to Somerset House for a copy of a birth or marriage or death certificate about twenty-five years ago) had been a "Distinguished Civil Servant," she used to say; and her mother was the niece of a City Knight's half-brother.

It was her father's romantic soul which had caused her to be named Rosanna; it was her father's mental qualities which, stirring again in her, made her love to sit at the lattice and muse upon the past. But it was her mother (inheriting business tendencies from the City Knight) who had opened the Oriel House School for Young Ladies, when the Distinguished Civil Servant had prematurely died of—but whisper it!—a weakness for French brandy such as men of romantic soul were liable to contract in mid-Victorian days, before the change of taste and rise of whisky. When Miss Rosanna felt hot needle-like twinges in her feet she used to say, "My poor father's gout again!"—gout being an aristocratic ailment, and almost as good a proof of gentility as the possession of a family tree. On her mother's side there *was* a family tree (engrossed on India paper, and kept in the family Bible); and her mother's fitness to open and instruct a School for Young Ladies was vouched for by the fact that in her own young-lady days (early Victorian) she had been a favourite pupil of the celebrated Miss Pinkerton's successor at Chiswick Mall. But it was obvious to Miss Rosanna that Miss Little and Miss Polter, though they could put letters at the end of their names, could put no family trees in front of them, and so "I am afraid they are scarcely gentlewomen, dear," Miss Rosanna used to say. "Such a pity! In the education of girls, you know, there is nothing so important as the catching of genteel manners from their governesses." These considerations made it all the harder to bear that Miss Little and Miss Polter should have a beautiful new school founded for them at the public cost—"*We* pay towards it, dear, my mother and I!"—a school which charged young ladies only three pounds a year; "while *our* fees, as you know, dear, are four pounds a term without extras. It isn't fair."

Sitting at the lattice, Miss Rosanna would look out on what seemed to be becoming a very hard, cold world. When her mother fell so seriously ill, ten years before, and became almost permanently laid by, the world began to get cold and hard for Miss Rosanna. "What I shall do if any more pupils leave us, dear, I really cannot say!" she would tell the student-teacher now and then; and she really did not know, poor Miss Rosanna! Her mother's illness had been so expensive and so long that nearly all their savings, effected while her mother was hale and afoot, had vanished. And there was a certain sum of forty-three pounds, of Miss Rosanna's own hoarded money, that had vanished in a lump—but when she thought of that forty-three pounds as she sat at the lattice she ceased to see the Green and the present, and she looked out with wet eyes upon the dead and phantom past. Romantic Miss Rosanna—loving and tender Miss Rosanna! She had loved and lost; and she liked to quote a popular Victorian poet to the effect that it is better to have loved and lost than never to have been in love at all.

It was when her mother fell ill and began to keep her bed that Miss Rosanna made her Great Effort. She *must* keep the pupils, she *must* stay their flight to the other Halls of Academe, and she must replace her mother's great linguistic abilities by engaging a Visiting-Master to inculcate a genteel knowledge of French. It was then that Signor Pedro di Perez entered Oriel House School, and love—the tender visitant—first entered the heart of Miss Rosanna. Signor Pedro di Perez was not—his name betrays it—a Frenchman: but it is well known that all Spaniards, like all Italians, speak French almost as well as they speak their native tongue; of course Signor Pedro di Perez was a Spaniard, and Miss Rosanna used to think of him as a Grandee in exile and a noble Don. What Miss Rosanna liked about him at first was his lack of mercenary keenness; he was willing to teach the French language four hours a day, five days a week, at Oriel House School, for one shilling an hour. What Miss Rosanna very soon began to like about him as well was his romantic appearance; next it was his winning way of speech; and then it was the veiled and gentlemanly way in which he began to woo. "We were not exactly engaged, dear," she used to tell the student-teacher, "but we should have been if he had not been called away to fight for his country in a foreign land. We feared the shock to my mother, if we asked her consent to a formal betrothal, and we waited; but"—Miss Rosanna put an oft-darned cambric handkerchief to her eyes—"Fate would not permit it; the dream was too sweet; he is dead!"

It was in the year when Spain herself was making a Great Effort—a great effort to conquer the Cuban rebels in the end—that Signor Pedro di Perez said, one evening as they sat together at the lattice, "Dear Meez Rosanna, you zee at your foot"—his English was less perfect than his French—"a meezerable man! My countree it callz me; my duty it is to Cuba to voyage. I for my country must fight like ze brave!"

Miss Rosanna, sitting at the lattice, remembers with pride how she said: "Go, dear Pedro, perform the duties of a man of honour, and when you return, a victor, still true to you will be my heart, still reserved for you will be my hand."

But Signor di Perez, kissing the hand, then said, "Alass, I cannot go; I have not the riches. Wiz twenty shillings one week, how can I pay the ship to Cuba?" And then Miss Rosanna going to her hoard, had put the forty-three pounds into her hero's hands.

Signor di Perez departed, and has never returned; Miss Rosanna has never even heard from him by letter. He would be killed in battle immediately upon landing in Cuba, she feels sure. Yet—so weak the mind, so romantic and hopeful the heart—she sits at the lattice and looks out for him sometimes. And sometimes she will unlock the mahogany bureau and take out and regard again the paper—the double-ruled paper—on which he confessed his love. It was an ingenious form of wooing—"so delicate, so dignified," Miss Rosanna thinks. These are the words of the document on which she looks with wet and dimming eyes:—

"ORIEL HOUSE SCHOOL.

Exercise in French Traduction.

Originale. Mademoiselle, j'ai osé vous aimer,
Traduction. *Miss, I have dared you to love,*
et je ose le vous dire. Je ne suis
and I dare it you to say. I not am
qu'un pauvre exil (dit le jeune homme)
than a poor outlaw (said the young man),
mais en amour tous sont egal, n'est-ce-pas?
but in love all are equal, not is it not?
et quand le cœur parle il faut que
and when the heart talks it needs that

BRITISH MUSEUM

l'autre cœur entend. Si vous
the other heart hears. If you
est offensée, dites-le moi, et je
is offended, say it to me, and I
vais disparaitre par le premier train.
go to disappear by the first train.
Mais si vous pouvez me donner un
But if you can to me give a
peu d'espoir, oh, ravissante Mademoiselle, si
little of hope, oh, ravishing Miss, so
bonne et douce et charmante, fais me une
good and gentle and charming, make me a
discrete signe de ça, pour me encourager.
discreet sign of that, for me to encourage."

Signor Pedro had brought the sheet of school foolscap to Miss Rosanna, presenting it on his bended knee and saying, "Meez Rozanna, one exerceese for you to correct!" And that was how she learned of his love. She blushes when she remembers how she made the discreet sign.

Miss Rosanna's mother, lying upstairs, never knew a word of this touching romance, and nobody knows of it except Miss Rosanna and the student-teacher. The student-teacher, like Miss Rosanna herself, is too little versed in the wickedness of the world to suspect that Signor Pedro di Perez did not die in Cuba, never went near Cuba, and spent the forty-three pounds in riotous living in Soho. So Miss Rosanna can aureole his memory with wreaths of love to the end.

The end grows nearer; the pupils at Oriel House School for Young Ladies now number only eight; the Council School and Miss Little and Miss Polter flourish; from the lattice Miss Rosanna sees Miss Polter walk upon the Green with Mr. B. W. Brounson, B.Sc., of the Council Technical School, encharmed in love's young dream. Miss Rosanna does not envy Miss Polter her companion. "He is not like my Pedro, dear!"—but, "If only I was a practical teacher, dear!" is what Miss Rosanna regretfully sighs. "It's too late now. I could not go into what they call Training, and I'm sure I should never pass the severe examinations if I tried."

Ay de mi (as Signor Pedro di Perez used to say at the lattice), it is a changing world, a cold world, a hard world for poor gentlewomen, and one cannot light the fire and boil the pot with the wood of a family tree.

So at the lattice a thin form sits, an old maid at the lattice, and faded eyes look out upon "the years that the locust hath eaten." It is almost winter; the grass will grow on the Green again next year, but never again will Oriel House School be filled with pupils, nor the gallant form of Pedro di Perez be seen from the lattice once more. . . . A sharp rat-tat; a policeman at the gate, "a man in blue," with a blue paper, a summons for the last half-year's rates! And the Vicar's wife going past, just at such a moment! Oh, Miss Rosanna, poor Miss Rosanna, that it should come to this! Tears fall upon the French Traduction as she locks it into the mahogany bureau, and goes to confront the policeman. "I have one pound four and threepence," she says. "If that would do? Or I will pay it all at the beginning of next term!"

"Sorry, Mum." The policeman shakes his head. "Summons returnable a week to-day, Mum." The brass-plated gate clashes behind him, and Miss Rosanna stands looking out into woe.

WITH THE BRITISH ASSOCIATION.

CAPE TOWN.

BY A SPECIAL CORRESPONDENT.

IT was our last night at sea, when its whole attitude suddenly changed. Dark clouds, pregnant with threats, lowered on the horizon; stormy petrels dashed to and fro in ominous heraldry; even the two or three albatrosses that with majestic persistency had followed steadily in our wake broke off in scouting movements far on either side. Ever before, the moon had shone out of a clear sky, transforming the sea into a mass of molten silver. This evening it glowed intermittently, veiled behind racing clouds, encircled by a rainbow because of the moisture in the upper air. By degrees the wind rose, breaking the tops of the grey-green waves, destroying that which it had helped to build up. For a billow is no instantaneous creation. Like all things under the sun—and over and beyond it too—it *becomes;* first as a microscopic ripple kissed into being by a zephyr, then as something you may see uneven on the surface, growing into a wave under the action of a mysterious, unseen, but potent influence, till it has become a restless, inconsolable billow, wandering incessantly over the vasty deep until its strength is spent and it sinks once again to rest on the breast of the mother that bore it. So was it on all sides of us; not a storm so much as a demonstration, perhaps of hostility, more probably of distress—"There is sorrow on the sea; it cannot be quiet." And yet I have heard that One did speak to the waves and there was a great calm—which things are a parable of man's storm-tossed individual and social life.

. . . . . .

A long low line of electric lights; a flat mountain in the background, hardly looking its 3500 feet; a break to the left, and then in the far distance another long line of hills of irregular outline, playing with the mists; the moon slinking out of sight, before the breaking day, behind a cloud, and yet ennobling it with its soft light; to the right, partly attached to Table Mountain, a somewhat solitary conical elevation —the Lion's Head they call it—connected with another eminence, Signal Hill; a few ships in the bay; the docks in the immediate foreground. So appeared Cape Town after sixteen days. On closer inspection something in the nature of a gigantic rocky amphitheatre and the city nestling in the hollow; as if you had by Edinburgh the Salisbury Crags on a much grander scale, and a smaller city between them and the sea; on the right is Arthur's Seat, and the Lion's Haunches are represented by Signal Hill. But it is not Scotland —it is not even Europe—it is *Africa*, the loadstone of many an adventurous spirit, the grave of many a reputation. Think what it is to live in a country where you can set out from your own door, and without crossing the sea, reach places and traverse areas where no white man has ever set his foot.

Probably the first sight of the coloured inhabitant is as he unloads the mails or as he stands with his low-swung, fancily-named hansom cab, expectant of a fare; but the mixed breed of Cape Town is not attractive. Again, it may be that the first impression of the city itself is disappointing. Here is a place with 100,000

inhabitants, exclusive of its suburbs, rich in historic interest and association of more than two and a half centuries, and yet presenting, with certain well-defined exceptions, the appearance of a jerry-built, stuccoed township of very recent origin. There is at this moment a certain unkemptness and lack of finish that is the more noticeable because it is so unexpected. But when you inquire, you find that the place is practically being rebuilt. What lies around so untidily is but the débris of a transformation that will leave Cape Town less Dutch in appearance and more distinctively colonial. The exceptions referred to above are a set of public buildings, including the Houses of Parliament, Government House, the Public Library, the South African Museum and College, roughly grouped about the oak-bordered Government Avenue, and the new city hall with its magnificent frontage on the Grand Parade. In the neighbourhood of the former, also, are the Botanical Gardens, where you may watch the weaver birds working at their nests, or are perhaps first impressed with the broad-leaved, coarse character of the local grass. But to sit there in the strange surroundings of aloes and euphorbias, of cycads and eucalyptus, to inhale the balmy air which makes a man feel as if he had never known what it was to breathe before, and to watch the wind lay and relay the tenuous cloth of white mist upon the Table Mountain—this is the reward of the voyager, the ample recompense of crossing the seas.

The glory of Cape Town is its environment, the beauty and interest of its surroundings. Of these, Table Mountain and Groote Schuur possibly make the most direct appeal to the stranger—an appeal which is, however, very different in the two cases. The mountain may be approached by numerous routes, and offers a romantic walk, in the course of which any sea-level doubts in the mind of the climber as to the actual 3500 feet of its height are rudely dispelled. The length of the walk may be reduced by covering the initial stage of the easiest route in the electric car, as far as the summit of the Kloof Nek that links the Lion's Head with Table Mountain. The way is sheltered by pines, all artificially planted; for South Africa is essentially a treeless country, although several kinds thrive when introduced, and the oak attains a precocious, if valueless, maturity in forty years. As the foot-track skirts the side of the mountain, a magnificent backward view is obtained of the Lion's Head, whose bold granite summit towers aloft, its lower slopes beautifully garbed with the silver tree (*Leucadendron argenteum*), while past it peeps the end of Robben Island, situated just outside the bay, and now used as a leper and lunatic asylum. The path leads through a wonderful richness of flowering shrubs and plants that find the home of their desire on the moisture-bathed mountain—the various kinds of *Disa* orchid, the magnificent *Proteæ*, the white *Gnidia*, the purple *Podalyria*, and heaths white, pink, and yellow, together with a large and rosy anemone that, with other characteristics, reminds one continually of the Rivieral shores of the Mediterranean.

A sharp advance and ascent by Kasteel's Poort and the level of the plateau is reached, the upper edge of which is the visible Table Mountain. Here, just above the poort, are to be found two of the city's reservoirs, remarkable as being built at 2400 feet above the sea, and retained by dams, one of which contains over 31,000 cubic yards of masonry. From this point a further advance and ascent lead to the extreme limit of the plateau, whence the climber may look down on Cape Town and the bay as from a balloon.

The interest of Groote Schuur is human, more particularly Rhodesian. Within its precincts you feel the influence of the imperial mind that expressed itself even in the furbishing of the old country house and the laying out of its grounds. As such it is easily outclassed in size and luxury by many British country-seats. As the old transformed Dutch farmhouse it is unique. A short railway or tram ride brings you to a point in the main road through Rondebosch, whence you step aside into an avenue of noble pines, from which, at the upper end, you see the Devil's Peak, part of the Table Mountain. Presently the house itself comes into view with its old-world air, arresting attention because of its massive simplicity. There is nothing ornate, nothing in vulgar taste; everything is suggestive of strength and solidity—the tiled vestibule and passages, the heavy teak panellings and ceilings, the rare Dutch cabinets and lamps of beaten iron, the costly tables and bureaux bought by half-a-dozen men continually on the outlook for their employer, the Roman bathroom like a miniature quarry, the spareness of his bed-chamber—everywhere strength and solidity, nothing that is flimsy or false or ineffective. Treasures of antiquity from the great Zimbabwe, treasures of modern literature in a goodly library, but, over it all, house and furnishings alike affording a résumé of the history of a continent. Behind the homestead an old Dutch flower-garden rises in three white terraces from the gravelled courtyard. Beyond this are grassy lawns, still sloping upwards, chequered and hedged by brooding firs; and farther still and higher is the rich pine and oak dress of the Devil's Peak and Table Mountain, above which rise their bare grey shoulders. Skirting the lawns are parks and paddocks, tenanted by representatives of the South African fauna. The roar of the lions in their enclosure high up on the mountain slopes sometimes disturbs the light sleeper in Rondebosch. Descend again, and not so far from the beautiful road that runs along the mountain-side through this nine-mile gift to a colony, and somewhere in the vicinity of the house is a summer-house, staired with real Dutch clinkers brought from Holland, from the summit of which may be obtained one of the finest perspectives in the world. Behind, the Peak and Table Mountain; immediately at hand, the trees amidst which Groote Schuur nestles and hedges of plumbago, Cecil Rhodes's favourite flower; but in front a perfect panorama of the Cape Flats, bounded on one side by False Bay, on the other by Table Bay, and in the far distance by the cloud-capped mountains known as the Hottentots Holland. Over the thirty-mile-broad plain the eye wanders contentedly, now resting on the red-tiled roofs that peer from out the nearer firs, which are, however, soon exchanged for the scrub of Port Jackson willow and mesembryanthemum, broken only by streaks of white sand—a subdued study in green and brown—now on the mountainous horizon that the clear atmosphere brings so impressively near. It is an imperial outlook, and worthy to be the chosen physician of a mind that thought imperially and yet also strove, and whose spirit still lingers amongst the hills and plains of the subcontinent that holds his dust.

BY MANY HANDS.

"Quot homines, tot sententiæ."

RUSKIN said, "It is far better to give work which is above the men, than to educate the men to be above their work," which reminds one of the ever-green topic, which we shall probably be discussing for generations to come. It is urged by many that from our primary schools we turn out boys who despise manual labour, and girls unfit for domestic service. The ideal working man is sketched for us. He is sober, steady, punctual, hard-working, and extremely careful of his employer's material. He knows his work and does it thoroughly, and never complains. It will be generally found, however, that the man who cries most loudly for the ideal workman, is about the last employer who deserves such a *rara avis*. Similarly we hear persons deplore the scarcity of "good servants," oblivious of the fact that so few mistresses deserve a good servant.

FROM the teacher's point of view, however, this topic is not worn out, neither can it be brushed aside as done with. The schoolmaster should be just as proud of having turned out a conscientious engine-cleaner as a good clerk. The world seems to be full of clerks, but not good ones. The number of clerks to the square mile in London alone is appalling, and the scarcity of really skilled workmen is a distressing fact. The London teachers participate every winter in a heroic struggle against want in the poorer districts, and the unemployed question is a burning one. But the knotty point in the problem is the fact that the bulk of the unemployed are unemployable, and we are concerned to know whether the next generation will fill our large towns and cities with able-bodied men utterly untrained to work, and ignorant of the means whereby to make a living.

OUR elementary schools are not technical schools, but the seed might be sown in the primary school in an effective and common-sense manner. Work is irksome to a large proportion of the workmen because they do not understand their job, and are merely working to get money for bread — or beer. Ask a ploughman why he is turning the soil, and he will reply, "'Cos t' gaffer tell'd me." In all departments of life, from the War Office downwards, we find varying degrees of inefficiency, a greater proportion of which is due to defective educational methods.

IT is asking too much, however, on behalf of the public to expect the teacher to remedy everything. The parents, for instance, may be reasonably expected to take at any rate *some* responsibility for their offspring, otherwise we may look forward to the day when the proud parent, on the arrival of an addition to his family, will be presented with an official letter of thanks from a paternal Government, which will "take over" the child from that moment, so that the parents shall not be worried.

THE charge that boys are brought up to despise manual labour, however, is not altogether unfounded, and there have been instances where the foolish vanity of parents has been reinforced by the mistaken pride of the teacher. There have been schools where the brightest and best boys were taught to work and live for the inestimable boon of occupying a stool in the counting-house of a neighbouring large factory. It would seem that nobody was wanted to work in the engine-house or the factory to produce the goods. No; the reward of virtue and industry was to be nice and clean, and work, or rather "go to business," from 9 A.M. to 5 P.M., with a genteel interval for luncheon. The work of the engine-house and the factory demanded a higher intelligence and a greater knowledge than that of the counting-house, but the boy in the clean collar, with clean hands and face, cultivated Jew and Samaritan relations with the boy who worked in the factory, and left it in a blackened smock and with begrimed features.

THE relative value of these twain adjusts itself in later years when the factory boy has become a man and receives a pound a week or more wages than the genteel clerk, though the latter looks down on the former all the same. No one can deny the existence of this unfortunate relation between manual and clerical labour, and the teacher can do much to break down the barrier. The world has less room for the idler than ever, and the future is for the worker, whether he works with hand or brain. The great need of the moment, however, is intelligent and well-informed manual labour, and the sooner the youth of our nation are inoculated for this purpose the better. The foolish father who "does not intend his boys to work as he had to work," should be completely disillusioned, and the school which can only point to a row of grinning clerks as its greatest achievement, should be brutally discouraged.

WE came across a little booklet the other day bearing the title, *The Decline and Fall of the British Empire: appointed for use in the National Schools of Japan.* Tokio, 2005. Of course this is a work of the "Looking Backward" species, and it relies chiefly upon clever comparisons between the condition of the British Empire and that of Rome, as set out by Gibbon in his *Decline and Fall*. The idea of the work is to point out to the rising generation of Japan of 2005 how their great allies the British fell away to nothingness, so to speak.

THE chapter on "False Systems of Education prevalent in Britain" is very smart, and in more places than one hits off exactly the weak spots in our present system. Of course none of us believe that the British Empire will either decline or fall, but we are not altogether blind to the defects of the system which prevails.

"THE home and not the classroom," says this writer, "is the best school in which to educate an imperial race. The schoolmaster may do much with the raw material entrusted to him; but dealing as he must with boys or girls *en masse*, he rarely finds their hearts and minds opening to him in that frank confidence which a child intuitively feels towards those who brought it into the world." We have already seen in the Japanese how an imperial race can be schooled in the home, though it must be borne in mind that what is known here as patriotism is a positive religion in Japan. The writer warns the youth of Japan in 2005 not to "persist in thinking that to sit on an office stool in Tokio and read *Scrappy Bits* at lunch, is nobler than to be an intelligent farmer or an artisan." Another warning note is: "But a civilisation under which men find it dull to plough the fields and women do not suckle their offspring is a delusion and a sham."

AS a geographical forecast it is amusing to read that in 2005 India "has fallen to Russia, South Africa to Germany, Egypt to the Sultan, while Canada has taken shelter beneath the wings of the American Eagle, and Australia become a protectorate of the Mikado." There is no immediate need, however, to discard the maps now in use, or ask the mad wag who makes the forecast to submit samples. We are a poor played-out old country no doubt, but somehow those who are supposed to be ahead of us theoretically are practically and actually behind us yet on the whole.

THE quarterly return of the Employment Department of the London Chamber of Commerce contains the following paragraph: "The posts of junior clerks are difficult to fill because the number of youths leaving school who write a good hand and have mastered the rudiments of shorthand is woefully inadequate." We do not believe that this shortage is actually existent, though handwriting as an accomplishment cannot but be adversely affected in commercial circles by the general use of the typewriter. The boy who does write a fair hand when he leaves school soon drifts into a "sloppy" style, seeing that envelope and wrapper addressing are the chief calls upon his penmanship.

AS to shorthand, its actual commercial value diminishes every day as far as the shorthand writer is concerned, because it has become so general, and as a matter of fact it is regarded in commercial circles more in the light of a "make-weight" qualification. The London Chamber of Commerce, however, need not put all the responsibility on the schools. If junior clerks are really getting scarce, all the better for the existing generation of upgrown clerks who are *not* scarce. Perhaps the real reason why junior clerks are not rushing in crowds for City offices is that the parents are at last realising that the City merchant's idea of what he should get for his paltry five or six shillings a week is a trifle wide. It is the remuneration for clerical work, both present and prospective, which is "woefully inadequate," but perhaps the London Chamber of Commerce has not seen the matter in that light.

IF a parent has to send his boy up to the City and find fares and lunch money, he will naturally regard the arrangement as of the "heads-I-win-tails-you-lose" character in favour of the merchant. The London Chamber of Commerce desire that good handwriting and shorthand should be made special features in the ordinary school curriculum; but we do not want a nation of clerks. The proper proportion of boys should be trained for commercial life, but we do not want the British boy-clerk to be like the Dukes in the comic opera—three a penny. *En passant* we should not have much hesitation in saying that the elementary schools of the country are the only ones where handwriting is *taught* at all. In the upper middle-class and the aristocracy, hieroglyphics, bordering on cypher, seem to do duty in this respect.

THE Education Committee of the Corporation of the ancient city of York has been snubbed by the Council. The Committee, by a snatch vote, recommended the Council to allow six or eight clergy of the Established Church to give denominational instruction at the Pupil Teachers' Centre, which of course is maintained by the ratepayers at large. Here were all the elements of an acrimonious and continuous squabble, which would have done no good to the Church or to the schools. A proposal that a syllabus on the same basis as that used in the Council schools should be prepared for the Pupil Teachers' Centre was carried, and the *status quo* maintained. The "religious difficulty" has never had any real existence in York, and when the old School Board was alive, the Diocesan Inspector was allowed to examine the Board Schools in religious knowledge, to his great satisfaction. It is too late in the day to sow seeds of discord, and the City Council evidently recognise the fact.

FOR all that we are in some doubt about York. During the debate a member of the Education Committee said: "We are all Christians;" and the Council roared its ribs out. What are we to deduce from this? Can it be that the ancient Roman capital of this kingdom has not yet emerged from Paganism? If so, what a chance for a modern Augustine! Why should the Council wax hilarious on being referred to as "Christians"?

N.U.T. NOTES.

IN the "silly" season the editors of our daily newspapers seem to vie with one another in their efforts to obtain cheap "copy," in the guise of "correspondence." The editor of the *Morning Post* had probably no such end in view when he advocated, in an interesting article, the "promotion" of the best-qualified "elementary teachers"—how cordially I detest this misnomer, to be sure!—to the secondary schools. Some one with the priggish instinct strongly developed attacked the arguments of the article, bringing on his devoted shoulders some of the heavy artillery of the Union, Messrs. Marshall Jackman, A. R. Pickles, B.A., G. A. Christian, B.A., and W. Langbridge being amongst those who pulverised the Pinchbeck educationist's vapidities. One of his most striking sentences was: "It is the business of the

"Promotion for Teachers."

elementary teacher to teach as much as possible, of the secondary teacher to teach as little as possible: the one gives his pupils the utmost he can, the other makes the utmost demand upon them." I hesitate to say whether the *métier* of the "elementary" or "secondary" teacher is exaggerated the more. Doubtless, in the bad old days of the early eighties, when "examination by results" existed in its most virulent form, and schools were egregiously classified as "excellent," "good," or "fair," according to the percentage of passes in reading, writing, and arithmetic, the "elementary" one did "teach as much as possible," taking no risks of his professional record being besmirched, and leaving nothing to chance. But with the introduction of a sane system of inspection came intelligent methods; and if the individual child in the primary school be not trained as he ought to be, the fault lies at the doors of those content to see scholars huddled together in classes of 60, 70, or 80. In cases where the secondary master teaches "as little as possible," the reason is not far to seek, and need not be even faintly adumbrated in these pages. Some of the Union's leaders boldly combat the idea that transfer from primary to secondary schools is "promotion" at all. Mr. Pickles thus writes: "If the most difficult posts in the teaching army are the posts of honour, then the teacher in an elementary school, with its huge classes, its frequent lack of good home influence to supplement its work, is certainly doing greater work for the nation, and he is doing it well, despite the croaking of more fortunately situated cynical detractors." On the question of the Register the *Morning Post* comes out splendidly, in this style:—

"There must be one column only in the Teachers' Register. All teachers who have been trained, whether for primary or secondary work, must be admitted to it, and their academic qualifications, if any, will naturally appear against their names, and influence the choice of those who have appointments to offer. The double column of the Teachers' Register is the last fortress of the vested interests of education. It will have to be carried. The Board of Education has only to give those vested interests notice to quit, and the thing is done."

PLENTY of earnest, thoughtful, and sincere men and women still object to what they term "Sectional" Associations, and point out that under the ægis of the Union there is room for all grades and classes of teachers. An ex-President of the N.U.T. is not the individual to deny the last-mentioned assertion; and yet I ever rejoice when I see the many "National" Associations active and flourishing. Although organised outside, and independent of, the Union, as soon as they have agreed on their programme and crystallised their policy, they come to the Mother Union to carry it out: and the more active the ancillary organisations are, the greater the animation pervading the authorities at Russell Square. Amongst the auxiliary associations the National Federation of Assistant Teachers, or the N.F.A.T. as it is now universally designated (for teachers delight in the using of initials), is *facile princeps*, both for its size and the energy and ability with which its affairs are conducted. From its twelfth annual report one learns that the number of its affiliated branches is now 117, whilst the membership-roll is well over 15,000. The report is a sustained pæan of congratulation, success having attended the Federal Committee's labours all along the line. Two paragraphs which specially interest me referred to the *Journal* and the *Handbook*. The *Class Teacher* has evidently come to stay, and its talented editor, Mr. Frank W. Goldstone, richly deserves the felicitations constantly showered on him. To be able to boast—and yet he is the last man in the world *faire claquer son fouet*—that not one penny has ever been paid for "copy" for the *Class Teacher*, is as significant a testimony to his personal popularity as it is to the loyalty and good-will of his voluntary (unpaid) staff. The *Handbook* continues to be a valuable asset of the Federation, and well it may. The unwearying Mr. J. T. Boulter has been able to tabulate the salary scales of 289 educational authorities, and no student in training should accept an appointment without first consulting this class-teachers' *vade mecum*.

The N.F.A.T.

PERHAPS the Hull Conference reached high-water mark, even amongst the long line of brilliantly successful annual *réunions* of the Federation. The moment one arrived at the "third port," one realised instinctively something of the splendid earnestness which had characterised the efforts of the local committees for the past twelve months; and the delightful innovation of "four-o'clock tea," with the Mayor and Mayoress in the Reception Rooms of the fine Town Hall, made us at once *en rapport* with our congenial surroundings. The musical items rendered at the Conversazione held in the magnificent suite of Assembly Rooms were superb, whilst a more representative gathering of local notabilities to welcome the delegates I never beheld. There were not too many speakers, though some of the addresses were rather long (for the occasion), and it struck me that the man who might, with advantage, have said most, occupied actually the fewest moments. The Mayor of Hull has no pretensions to oratory, but his welcome was homely and sincere, and the more one saw of him the better one liked him. One understood that he had been as anxious as any of the Conference Committee to make the gatherings a success, and certainly his own share was not small. An extraordinary speech was heard from Mrs. Gardner (a member of the Hull Education Committee), whose sentiments were those of the shrieking sisterhood, the "women's righters," but whose utterance was gentle, and manner of speaking quite charming. Mr. Luke White, M.P., was laboured, and, *mirabile dictu!* apparently nervous. The Conference Dinner was likewise a brilliant function, and two of the best speeches came from Mr. T. P. Sykes (who was in tip-top form) and Mr. A. W. Dakers, B.A., whose long and arduous duties in the chair had not in any way impaired either his vigour or elocutionary capacity. Mr. Dakers had earlier in the day received an unparalleled ovation for his Presidential address, which, though cogent and forcible and well-argued, should, in my judgment, have castigated the apathetic and lethargic parent rather than the "big ratepayer." The business sessions were well attended, that of the afternoon effervescing with *élan* and interest.

At Hull.

READERS of these pages know with what persistency I have advocated the establishment of a Code of Professional Honour for the use and guidance of members of the N.U.T. Therefore it was with no small amount of satisfaction that I witnessed the adoption of such a Code by the members of the Federation. It is wisely

A Code of Honour.

and commendably brief, and being the first of its kind to be accepted by a large and powerful organisation, I reproduce its terms :—

"1. It is an unprofessional act for any member to take an appointment from which (in the judgment of the N.U.T. Executive) another member has been unjustly dismissed.

"2. It is an unprofessional act for any teacher to make an adverse report upon other teachers or their work (in reports of any kind, or in the log-book), without at the time showing it to the teachers concerned, and allowing them to take a copy of the reference.

"3. In cases of dispute between members of the N.U.T. appeal should be made to the local Committee or Executive of our own professional organisation, as provided by Legal Bye-Law 15, before going to Managers or Education Authorities; and it is an unprofessional act not to abide by the decision of the Arbitrators.

"4. Any teacher guilty of a breach of the above Code shall be liable to expulsion from the Union."

This, perhaps, is not the form in which I should to-day proceed to formulate my own professional Code, yet I congratulate the Federation most heartily on having acted, whilst in the older Union we have had to be contented with *talk*. Mayhap, Scarborough next Easter will bring the matter to a head.

* * *

A Reflection or Two.

AN abortive attempt was made by Messrs. A. E. Cook and H. J. Wood to secure the support of the Federation for Mr. W. A. Nicholls, in the event of this gentleman being nominated for the Vice-Presidency of the Union. Mr. Nicholls is perhaps the most popular and capable President the London Teachers' Association has had for many a year, and, in my opinion, is the one man able to win the Blue Riband of the Union for the metropolis. Unfortunately, he labours under the disadvantage of being practically unknown in the provinces, having never been prominently associated with the administrative work of the N.F.A.T. The "strong man" of the Federation to-day is undoubtedly Mr. Frank W. Goldstone, who is bound to be President of the N.U.T. some day—whether as head or assistant—and whose candidature would, I believe, at Hull, have been endorsed with enthusiasm and acclamation. Wisely, however, he has concluded that his time has not yet arrived. Whether the chosen of the Federation be ultimately Mr. Goldstone or Mr. Nicholls matters very little, for either gentleman will make an admirable President, bringing lustre both to the distinguished office and the class-teachers' cause. For the first time in its history a division was taken, and I was heartily glad to see that the Conference declined to hustle the Executive on the question of a Sustentation Fund. A scheme of Electoral Districts, riddled and laughed to scorn by every man who discussed it, was in the end adopted. My fervent hope is that the Federation will never rue the decision come to at Hull: and I venture to prophesy that two years hence there will be no "election results" to chronicle, for there will be no opposition to the members elected next year at Nottingham.

* * *

"B. and O." Council.

THE last meeting of the Council was held at Page Hall, the mansion secured through the foresight and zeal of the Sheffield teachers—as fine a body, be it known, as any in the kingdom. The Council is wise to meet occasionally at the Homes for which it is responsible; and, personally, I never visit either Sydenham or Sheffield without experiencing a thrill of gratitude to the benevolent individuals through whose efforts the orphanages were obtained. Further, I always feel that were I to fall by the way, and circumstances necessitate it, I could with every confidence leave my fatherless children to the tender care of the big-hearted men and women who form the House Committees of the Homes.

A. C.

NOTES FROM THE NORTH.

School Board Elections.

"COMING events cast their shadows before" in many cases; as in the present instance, long before. There has just been issued from the Scotch Education Department an order for the regulation of the triennial School Board election in March next. Many of us had hoped that an end to the present method of conducting these elections would have been made by this time, and that the cumulative vote would have been abolished, but this election at least will be carried through on the old lines. In the letter accompanying the order the note of economy is sounded very clearly. Their Lordships trust that every effort will be used to keep down the expenses of elections, and it must be understood that they will disallow any expense incurred through a failure of the returning officer to avail himself of the machinery at the disposal of the Board or any charge on a higher scale than is warranted by the letter accompanying, unless the previous sanction of the Scotch Education Department has been obtained. It is to be hoped that, as the result of the greater interest evinced in educational affairs during the last three years, the people of Scotland will take a livelier sense of their responsibility than they have shown in past elections. If they do so there will be less cause for the great current of discontent with education, which is at present welling up in various quarters. The people of Scotland have the matter in their own hands at least once in three years. Professionally I am certain teachers would be the gainers from a more widespread interest on the part of the public.

* * *

Tenure.

THE subject of tenure has during the discussion of the Education Bills of 1904 and 1905 been pretty much in the background. Cases of dismissal during these months have been rare, but signs are not wanting that a recrudescence of the evil is taking place in several quarters. This emphasises the necessity for increased vigilance on the part of the Institute. The hardships endured by many rural teachers are indeed great, and instances have come to my notice of petty actions on the part of some of the small School Boards. It is not necessarily dismissal that is the worst thing that country teachers have to face, but there is the constant nagging on the part of a School Board member, the innuendoes flung hither and thither which cannot be contradicted. Loss of dignity, to say nothing of the reduction of salary, has to be borne with rather than that teachers should seek redress at the hands of the public. At the recent September meetings in Edinburgh I had opportunities of conversation with not a few of the rural brethren, and the stories were in almost every case identical.

Cases of oppression—not open, perhaps, but none the less real—were numerous. How this state of affairs is to be remedied will be a matter for the serious consideration of the General Committee of the Institute. The rural teachers are inclined to think that the teachers in the larger centres are none too sympathetic with them, but I confidently believe that this is not the case. Many of the class teachers in the urban centres are enjoying better salaries and less worry than the great majority of the rural teachers. But is that as it should be? Man cannot live on pure air and grand scenery alone. When on holiday I sometimes envy them these, especially if these are in the vicinity of a grand trout stream. But when one learns the true inwardness of the matter, envy gives way to sympathy and a desire to help.

THE betterment of the rural teachers will react on the class teachers in the large city. What is to the advantage of the former is for the good of the latter.

Rural Teachers.

Promotion in city schools is indeed slow, but it will be slower still if it is found that there are many rural teachers who are willing to take the places of the city assistants at smaller salaries. The prospect of being one's own master—so far at least as the school is concerned—has attractions, hence the great rush of applicants for country head-masterships, even when the emoluments are small. Many of the older rural teachers are feeling the pinch. This upward tendency in salaries is affecting the class teachers and is passing them by. How can this be remedied? There are various ways suggested. In Scotland there is no Rural Teachers' Association as in England. To many this appears a good thing, for it is not well when an association is broken up into factions. There are few to-day who think that, if the Institute had at the time of the formation of the Class Teachers' Association given that attention to class teachers' interests which the younger teachers thought necessary, there would have been an organisation separate from the Institute. History in this matter must not be allowed to repeat itself, hence the necessity, the paramount necessity, of the Institute tackling the rural teacher problem at once. Their interests must be attended to, and if the Institute does not at once do so, who will blame the rural teachers if they start an organisation of their own. Events are at present tending in this direction, and it will be the Institute's fault if it does not now step forward and offer a helping hand to the rurals. I am heretic enough to think that a separate organisation is not a wise measure, and, therefore, I trust that the expressions of sympathy will be of a practical nature.

IT is becoming more and more evident each year that questions of management are occupying too large a share of the time of the committees of the Institute.

Internal Affairs of the Institute.

For a year or two I should like to see the Institute allowed to go on as it is doing, and give more time and attention to questions that are of vital interest to the profession and to education. We as teachers frequently complain of the number of circulars issued by the Department dealing with the internal economy of our schools, yet we are the very persons who in our own affairs show a very bad example. Questions of importance are at the present time looming ahead and it should be our endeavour to concentrate attention on these rather than take up our time tinkering with rules and representation. The rural problem, as I have indicated, is pressing. The subjects of superannuation, tenure, training of teachers, and evening schools require our immediate attention. If something can be done in these matters then the Committee of 1905–06 will have deserved well of the members of the Institute, I consider. Over ten years' experience of the committees of the Institute convinces me that we will not get "much forrarder" if we continually deal with questions of management, however important to some these may appear.

MR. BRYCE, the member for Aberdeen, in the closing days of the session of the House of Commons put the following question on Superannuation to the Lord Advocate:—"To ask the Lord Advocate what is the total amount contributed to the Scottish Teachers' Superannuation Fund by men and women teachers respectively since the passing of the Act of 1898; what is the average amount annually paid to annuitants out of this fund; what is the average amount annually paid to these same annuitants out of public moneys voted by Parliament; what is the present number of these annuitants, distinguishing men from women; and whether it is the intention of His Majesty's Government to propose legislation amending the Act of 1898." The reply of the Lord Advocate was given immediately before the rising of the House, and was as follows:—"During the period from 1st April 1899 (the date of the commencement of the Elementary School Teachers' Superannuation Act) to 31st March 1905, there was contributed to the Deferred Annuity Fund (Scotland) the sum of £118,730, the respective contributions of men and women teachers being £61,934 and £56,796. During the same period the Treasury sanctioned payment of—

Superannuation.

(*a*) Annuities amounting in all to £65 to 81 teachers (63 men and 18 women);

(*b*) Superannuation Allowances amounting to £3774 to 118 teachers (91 men and 27 women);

(*c*) Disablement Allowances amounting to £3476 to 129 teachers (51 men and 78 women).

At 31st March 1905 the number of teachers in receipt of annuities and allowances was 204 (92 men and 112 women). Any question as to legislation should be put to the First Lord, but I may point out that there will be an actuarial investigation into the fund next year." I understand the Scottish teachers are to have an investigation separate from that of the English teachers.

THE failure of the Scottish Education Bills of this and last year has called into existence a new association. It is to be called the Scottish Education Reform Association, and has been formed to promote the following objects:—(1) Co-ordination of the local education in each district under a single authority in an area adequate for the purpose of both grades of education; (2) the creation of a General Council of Education, comprising representatives of

Scottish Education Reform Association.

local education authorities, and also of institutions connected with higher education, especially universities, to advise the Scotch Education Department on all matters connected with its executive action. An executive committee, with the Right Hon. R. B. Haldane, M.P., as president, was appointed to prepare a scheme to submit to a future meeting. Whether this Association will be able to carry out the objects contemplated by its promoters is a matter of opinion, but there is at least work ready to its hand in the education of public opinion to the crying necessity of reform. If it can do this, its existence will not be in vain, though I venture to think that the present Government will not likely tackle the subject of educational reform in its next session. Already its hands seem too full with other matters.

ON October 4th the formal opening of the Carnegie College of Hygiene and Physical Training at Dunfermline took place. The institution represents another phase of Mr. Andrew Carnegie's beneficence to education. It is proposed to make it a centre for the training of teachers in physical training in schools. Following the method established for the training of teachers in the elementary schools, the Carnegie trustees propose to use the pupils attending the public schools of Dunfermline. At present the College is confined to young women who are prepared to adopt the teaching of physical culture as a profession. It is hoped that in the near future young men will also be received for training. Primarily, it is intended to serve Dunfermline only, but it is anticipated that the country at large will soon receive the benefits of this trained band of teachers. Until the country possesses a sufficient number of competent teachers, it will be impossible to make physical training in schools compulsory. There is in Scotland no training college for those who desire to qualify themselves in the subject of physical training, and it is confidently expected that this institution will supply the want. The gymnasium and swimming baths are probably the finest in Britain. In opening the College the Marquis of Linlithgow, the Secretary for Scotland, said that it was being recognised more and more that the amount of information or book learning which a child acquired at school was a matter of comparatively little importance. What was wanted was the healthy training of the boy or girl, both physically and mentally. Health and physical strength were matters of the first importance. Next in importance after moral training and the inculcation of family and civic duty, probably came a proper training of hand and eye. To secure these results in the highest measure, it was necessary to have a special class of teachers (probably not great in number), who, from their knowledge and previous training and concentrated attention upon the subject, could deal with the questions of the health and physical fitness of children in a way that it would be hopeless to expect at the hands of the ordinary teacher, who had so many different things to attend to. One such teacher might easily have the oversight of several schools, and probably only few would be required for the service of even a large town.

College of Physical Training.

THE Ladies' Meeting in September is now a very important adjunct to the Institute's Annual Gathering. This year the meeting was largely attended, and the discussion of the papers given was along practical lines. Miss Hamilton, Vice-President of the Institute, has been closely identified with these meetings since their inception. It was therefore a well-deserved congratulation she received on entering the meeting after her day's work at the business meeting of the Institute. To her was entrusted the giving of the report

Ladies' Meeting at the Institute—September Gathering.

MISS HAMILTON.

of the work done by the Ladies' Committee of the Institute during the past year. The work for the past year has not been so peculiarly devoted to women's interests as in preceding years, but has had a greater connection with the social side of education, nevertheless it has not on that account been less valuable. The employment of school children for hire during school hours and the regulation of their employment before and after school hours, together with the large subject of the feeding of school children, have been brought before the Institute Committees, largely through the instrumentality of the Ladies' Committee. The increasing number of lady teachers gives the committee ample scope to assist the Institute in the gathering into the fold all teachers. In this work they are proposing to take a new step this year by asking all Acting Teachers, immediately on the publication of the lists, to identify themselves with the Institute. I wish them all success in this new movement. Nothing succeeds like success, and prosperity and influence are on the side of the large battalions.

R. D.

THE LATE REV. T. W. SHARPE, C.B.

SINCE we last went to press the world has become the poorer by the loss of a great educationist. The former Senior Chief Inspector as a young man was an earnest and brilliant student. On one occasion he told the present writer that he never worked more than seven hours a day, but all those who knew him can testify that whether at study or in his official duties he had a remarkable power of concentrating his

attention on what he had in hand. Owing to this power he was able to take very high honours at Cambridge, both in classics and in mathematics, for in 1852 he was first in the Classical Tripos and Twelfth Wrangler, and also gained Bell's University Scholarship. Such was his delight when the last examination was over that he threw up his cap and declared that he would have nothing more to do with examinations, little knowing how closely his future career would bring him into connection with these necessary evils. The high character of his University work was recognised by his election as a Fellow of Christ's College, Cambridge, and his appointment as a tutor there. Among the many who had the privilege of passing under his tuition was the Marquis of Hartington, now Duke of Devonshire. In 1853, Mr Sharpe was ordained, and in 1859 he was appointed an Inspector of Schools. His first field of labour was in Yorkshire, and the accounts of schools he had to visit show the great advance made in education during his official career. He used to tell of some of the private schools to which children were only too frequently sent for want of better places provided by public funds. One of these schools Mr. Sharpe used to tell of, which was kept by an old widow of seventy, whose total income, including parish relief, was only 3s. 9d. a week.

After several years' work in South London, and as Inspector of Training Colleges, the Rev. T. W. Sharpe was made Chief Inspector of the metropolitan area, and in 1890 he was appointed Senior Chief Inspector. The district he nominally had under his charge was the small inspectorial district of Westminster, but the general supervision of the metropolis, the charge of special work—*e.g.* schools for the blind, and the task of co-ordinating the work of the other inspectors—kept the senior chief very fully occupied. As an inspector he was always extremely sympathetic, and gave the highest credit possible to earnest effort, even if that effort was not attended by much success. He was ever ready to recognise the good points in a teacher, and to remember them to the teacher's credit. Once when examining a certain training-college he felt constrained to award very low marks for the criticism lessons given by two of the students, but he felt that those men were capable of much better things, so he offered to let them have another try. Somewhat to his surprise the men declined, and elected to stand by their low marks, alleging that if they were allowed another trial it would not be fair to other men who might have low marks. Some years after this event Mr. Sharpe expressed to the writer his lively appreciation of the honourable sentiments by which those two men were actuated. But while he was sympathetic towards the failings of one who was conscientiously doing his best, his shrewd judgment soon detected humbug and hypocrisy, and he keenly resented any attempt to impose upon him. His eminent services to education were recognised by the Government, and in 1894 he received the distinction of being made a C.B. This distinction was quite unique, from the fact that the Rev. T. W. Sharpe was the only clergyman upon whom this distinction has ever been bestowed. He was also retained at his post for a considerable time after he reached the usual retiring age.

Two subjects that interested the Rev. T. W. Sharpe very keenly were the supply of properly trained teachers, and the care of defective children; and among the last of his official duties was the work of presiding over two Departmental Committees, one on the Pupil-teacher System, and the other on the Teaching of Defective Children. In both these cases the chairman threw himself into the work with great energy, the questions were thoroughly investigated, and full and suggestive reports were drawn up. The recommendations made did not at first meet with very full consideration, but the chairman had the satisfaction of

THE LATE REV. T. W. SHARPE.

living to see a very large number of those suggestions carried into effect; in fact, the great improvements that have been recently introduced are nearly all the outcome of the work of Mr. Sharpe's committee, while the risks that the reformers are running arise from adopting parts of suggestions, without considering the parts which refer to the other side of the question.

After his retirement Mr. Sharpe was appointed Principal of Queen's College, London, a place of higher education for ladies, and his advice was also sought by the County Councils of London and Surrey in the establishment of the London County Council Day Training College, and other important educational movements.

We are sure that all teachers will mourn the loss of their departed friend who now rests from his labours.

THE LATE MISS FLORA CLIFT STEVENSON, LL.D., Hon. F.E.I.S.

(Chairman of Edinburgh School Board.)

THE news of the death of Miss Flora Clift Stevenson, LL.D., Chairman of the Edinburgh School Board, which took place on September 20, at St. Andrews, to which she had gone in the hopes of restoring her health, will be received with feelings of deep regret by educationists in all parts of Scotland. Perhaps no figure has been more prominent in the educational circles of Scotland since the passing of the Scottish Education Act in 1872 than that of Miss Stevenson. For some time past Miss Stevenson

has not enjoyed good health, and during the last year she has been more or less laid aside from her work as Chairman of the Board. It was generally hoped, however, that she would be able to resume her former activity during the coming winter. It is not many days since she spoke hopefully to one of her colleagues of the work she was looking forward to in the immediate future. Her brave spirit and deep devotion to that which she had considered her life-work buoyed her up with the hope that she would still be spared for much useful work: but it was not to be so, and Scotland is to-day the poorer because of her death. She has died in harness, as she desired to do.

THE LATE MISS FLORA CLIFT STEVENSON, LL.D.

Miss Stevenson was educated at a private school and subsequently attended the classes of the Education Association for the University of Edinburgh. Her interest in education may be said to have begun when, as a girl, she started in her own house an evening class for message girls; but her first public work was undertaken in 1866 in connection with the Association for the Improvement of the Condition of the Poor, and as a member of the Committee of the United Industrial School. Thus early in her career did her educational work link itself with social improvement. But it was in the realm of School Board work that she was most widely known. On the occasion of the presentation of her portrait Miss Stevenson recalled the incident which led her in a measure to consecrate her life to the cause of education. It was one evening after the passing of the English Education Act of 1870, that the late Henry Kingsley said to her: "We must make sure when the Scottish Education Bill comes in that there is the same provision for the election of women as School Board members as there is in the English Act." She of course agreed that that was desirable, but she expressed some doubts as to whether there were many women who would care for the position. He replied: "You are exactly the kind of person who ought to take it." She supposed the social side of life was too attractive to her for the idea of what she conceived to be the serious and strenuous life which such a new departure would involve to be very alluring, and she feared she treated Mr. Kingsley's suggestion somewhat scornfully. However, the remark set her thinking, with the result that she offered herself for election to the first School Board in Edinburgh and was returned third on the poll.

Miss Stevenson was elected to the Board eleven times, and during these thirty-three years she filled many of the most important positions. She was asked in the first place to become Convener of the Destitute Children's Committee, and as such she was largely responsible for drawing up the scheme for the feeding and clothing of destitute children, of which, until the close of her life, she was honorary secretary and treasurer. Into the work she threw herself with characteristic energy, but at the same time it has to be noted that she held very strong convictions on the question of the "underfed child." Many years' experience of the administration of charitable funds led her to the belief that it would be an evil day for Scotland if Parliament put on School Boards the duty of providing meals out of public funds for underfed school children. Parents, she held, were all too ready to throw off their responsibilities in these days, and what she conceived was needed was an awakening of the public conscience.

In 1876 Miss Stevenson was appointed Convener of the School Attendance Committee, on which she did a vast amount of useful and valuable work. In 1891 she was elected Convener of the School Work Committee. This is one of the most laborious committees of the Board. Her mastery of detail and grasp of the whole facts of subjects connected with the Board made her admirably qualified to fulfil the duties of this office. As convener it was her duty to visit all the schools once a year, and to meet with the teachers and ascertain the wants of the children. In this department she evinced great sympathy both with teachers and taught

At times, it may be admitted, she approached this branch of her work with what appeared to some as undue official zeal, but it was all in the interests of what she conceived to be the best for both teachers and taught.

In 1900 Miss Stevenson was elected Chairman of the Board. Here she showed the same qualities in a more marked degree. Her ability of management and equanimity among harassing details enabled her to fill this very difficult office with conspicuous success, so that her colleagues on the Board were forced to admit that she was a powerful chairman. Her thorough independence gave her an undoubted power.

Her intimate acquaintance with the procedure of the Scotch Education Department was of invaluable service to the Board. In 1883 Miss Stevenson was called as a witness by the Endowed Schools Commission, and in 1894 she was appointed by Sir George Trevelyan, the Secretary for Scotland, a member of the Habitual Offenders and Juvenile Delinquents Departmental Committee. In 1898 Lord Balfour of Burleigh nominated her a member of the Departmental Committee to advise the Scottish Office as to the rules for inebriate reformatories. One of the subjects in which she took a deep interest was the Day Industrial Schools Act of 1893, and it was largely due to her energy and experience of this kind of work that the Edinburgh School Board established a school of this character.

Honours came thick on her during her lifetime, and it is to the credit of the Educational Institute of Scotland that it was the first to bestow on her an honorary degree. In 1892 Miss Stevenson was elected an Honorary Fellow, an honour to which only a select few have yet attained. In 1903 the University of Edinburgh manifested its appreciation of her public services by conferring the honorary degree of LL.D. on her. In May 1905 the freedom of the city of Edinburgh, an honour which only one other lady ever enjoyed, namely, Lady Burdett-Coutts, was given her. Her devotion to all that related to what involved the happiness and welfare of a nation—the care and training of its children—was the reason given for the honour.

It is difficult to estimate the character of Miss Stevenson. Her intellectual qualities were of a high order. Her capacity for business, her mental clearness of vision, her strenuous independence all combined to make her one who was prominently qualified to occupy the position in the educational life of Scotland she so long and so honourably filled. The lady teachers of Edinburgh found in her a warm friend, and to her more than any other is due the honourable position the lady teachers of Edinburgh enjoy as compared with their colleagues in other parts of Scotland. Miss Stevenson was a fluent and admirable speaker. Both by voice and pen, she has done much in her native city and throughout Scotland to enhance the value of education and to raise the teaching profession. Her place will be difficult to fill. Scotland to-day mourns her loss, and we gladly add a tribute of praise to one who stood in the van for all that was best and noblest in education.

THE Board of Education give notice that they will not recognise any candidate as a pupil-teacher from 1st August 1904, or 1st January 1905, unless application for such recognition is made not later than 1st November 1905; nor will they recognise any candidate as a pupil-teacher from 1st August 1905, unless application for such recognition is made not later than 1st January 1906. It is hoped that applications for the admission of candidates from 1st January 1906, may also be submitted before that date.

PYGMY RACES.

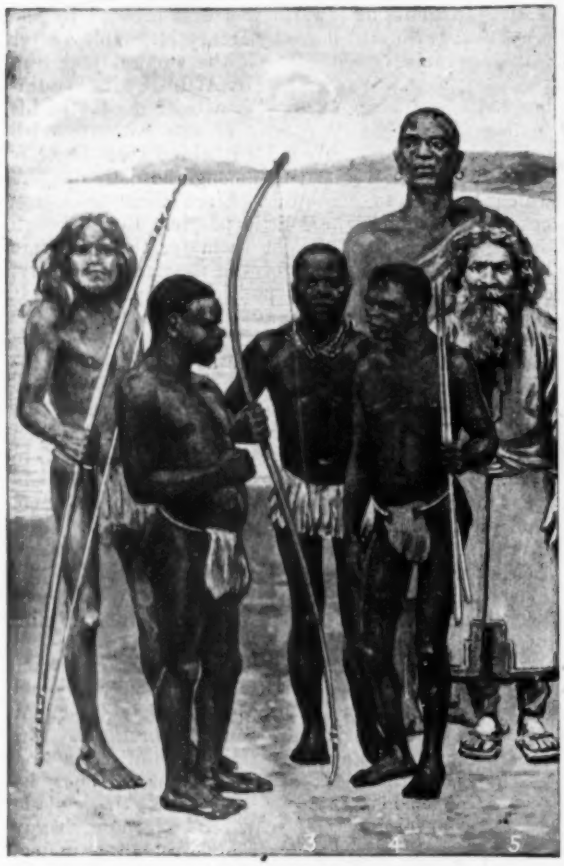
THE visit of the Congo pygmies to London, where they have been on exhibition at the Hippodrome during the past two months, has familiarised many of the people of this country with the appearance of these representatives of a very ancient and fast-vanishing type of man.

It may be said that popular interest in the Central African pygmies or dwarfs was first aroused by the account of them sent home by Henry M. Stanley, after his memorable march through the tropical jungle in 1887 and 1888. Writing to Mr. A. L. Bruce of Edinburgh in September 1888, with a brief outline of his achievements, Stanley speaks of the "dwarfs with poisoned arrows, securely hidden behind some buttress or in some dark recess," as among the daily dangers which he had to encounter. Since then much has been written about these little people. But although Stanley's description brought them for the first time before the general public of the nineteenth century, owing to the conspicuous position occupied by that explorer, he was by no means the *discoverer* of the pygmies.

In ancient times such writers as Pliny, Pomponius Mela, Aristotle, Ctesias, Herodotus, and Homer have made mention of the African pygmies, those of the east or north-east in particular. The Congo division of the race appears to have been first described in 1625, by Andrew Battel, an English sailor who had spent nearly eighteen years in their country. In 1865, Paul du Chaillu encountered the Obongo dwarfs, and after him a host of modern travellers have recorded their experiences with one division or another of the general stock.

That stock presents several varieties. In the main, it is divisible into the two branches of the black and the copper-coloured dwarfs. The former are rather taller than the latter, and have their bodies covered with a sort of fur or down, a feature of less frequent occurrence among their lighter-skinned brethren. Mr. Albert Lloyd gives an interesting account of his first meeting with the black dwarfs. He relates how he was sitting at his tent door one evening in a glade of the primeval forest, when several of those shaggy little people emerged from the surrounding undergrowth, and came shyly towards him. None of them were over four feet in height, and yet all were very powerfully built, and very hairy. Most of the full-grown men had beards half-way down the chest. Both sexes—for there were some female dwarfs too—wore nothing but a small strip of dark cloth. Throughout the interview they kept their little sparkling eyes moving constantly from one to another of Mr. Lloyd's party, after the restless, uneasy manner of monkeys; indeed, Mr. Lloyd actually mistook his first pygmy for a monkey, for he had already seen a pygmy that same afternoon. The dwarf was perched high up in a lofty tree, and when he saw he was observed, he swung himself from branch to branch with the ease and rapidity of an ape. Mr. Lloyd had his gun up to shoot him, when his native guide cried out that it was a man. And sure enough it *was* a little man, carrying a bow and arrows, yet, at the same time, quite at home among the tree-tops, like any ape. Mr. Lloyd ascribes to this same arboreal habit the tremendous muscular development of the pygmies' arms. In

illustration of this feature, he states that he tried on an armlet worn by one of them, and that, although it could scarcely be pulled off the dwarf's arm, it slid quite loosely up and down Mr. Lloyd's. He does not refer to the length of their arms. M. Paul Monceaux speaks more than once of the excessively long arms of the African Akkas and other negrillos. It may be inferred that this also was a characteristic of the dwarfs encountered by Mr. Lloyd, since they were so



PYGMY RACES.

1. Veddah, Ceylon. 2. Pygmy, Uganda Protectorate.
3. Andaman Islander 4. Bushman. 5. Ainu. 6. Zulu (for comparison), six feet in height.

immensely strong in the chest and arms that they could swing themselves at ease among the topmost branches of trees whose height ranged from a hundred to one hundred and eighty feet.

It is a curious circumstance that the tall Bantu people live in much dread of their little neighbours, to whom they show great respect. According to Captain Burrows, this feeling is due to the revengeful nature of the dwarfs, who are really formidable foes. As archers they are so quick and unerring that they can shoot three or four arrows, one after the other, with such rapidity that the last will have left the bow before the first has reached its goal. And their arrows seldom miss the mark. When it is understood that these vindictive little beings are able to slink noiselessly through the underwood unknown to their enemies (Mr. Lloyd learned that they had been watching him for days before they disclosed themselves), it becomes obvious that they could shoot down whom they chose, almost in perfect safety.

However, they have a more amiable side to their character. "The dwarfs of the Congo forest can be good or bad neighbours to the black people, according to the treatment they receive," observes Sir Harry Johnston. "If their elfish depredations on the banana groves, or their occasional thefts of tobacco or maize are condoned, or even if they are conciliated by small gifts of such food being left exposed where it can be easily taken, they will, in return, leave behind them in their nightly visitations gifts of meats and products of the chase, such as skins or ivory." But the danger of arousing the vindictive spirit of their pygmy neighbours is always kept in view by the Bantus. Thus, when a Bantu sees a dwarf arrow sticking in the stalk of one of his banana bunches, he will never dare to touch either the arrow or the fruit: the dwarf has marked out that bunch for his own use. For this fruit the dwarfs have a special weakness. Captain Burrows asserts that one of them will take a banana-stalk containing about sixty bananas, and sit down and eat them all at a meal, besides other food! Primitive men such as these have no idea of restraining their appetites.

The dwarf tribes have for centuries been famous as successful elephant-hunters, and on them the taller races largely depend for their supply of ivory. Their fiercer qualities have made them also appreciated as warriors. Dr. Schweinfurth mentions that he encountered a corps of several hundred Akka dwarfs among the fighting-men of the Niam-Niam on the Upper Nile. From their small stature he mistook them for a crowd of boys. "My misapprehension was soon corrected by the Niam-Niam people about me. 'They are Tikki-Tikki (or Akkas),' said they; 'you imagine that they are boys, but in truth they are men—nay, men that can fight." Indeed, if there is anything in heredity, they must have been born warriors, for their forefathers had much fighting to do in defence of their land, in the far-off days before the tall strangers had obtained a permanent footing; for it is the opinion of many ethnologists that these little people represent the aborigines of Africa. This deduction receives considerable support from the fact, testified to by Mr. Werner, that the pygmies living to the west of Lake Tanganyika regard themselves as the aboriginal race, who were the sole owners of that territory before "the big people" (as they call the Bantus) came and destroyed them in great numbers.

But the area of dwarf population, past and present, is by no means confined to Africa. Curiously enough, one of the earliest references to such people reveals them in the light of warriors. Writing some 2300 years ago, the Greek historian Ctesias states that there was then a race of black dwarfs in Central India, of whom the king of the Indians had three thousand in his train; "for they are very skilful archers." And Professor Windle points out that dwarfs are sculptured on all Hindu temples, and that Siva is accompanied by a bodyguard of dwarfs. Captain Meadows Taylor, in describing the cromlechs and kistvaens of the Dekkan, observes: "Wherever I found them, the same tradition was attached to them, that they were Mories' houses; these Mories having been dwarfs who inhabited the country before the present race of men."

The dwarf bowmen of the Indian king recall a

reference made by the Hebrew prophet Ezekiel, two centuries before the time of Ctesias. In enumerating the many glories of Tyre, and her far-extending influence among the nations, Ezekiel (xxvii. 11) apostrophises her thus: "The men of Arvad with thine army were upon thy walls round about, and the *gammadim* were in thy towers." In the present English version, the word *gammadim* is glossed "valorous men"; and, according to Sir Thomas Browne, the word used in the Septuagint signifies "watchmen." But in the Vulgate *gammadim* is rendered by *pygmæi*, and in the Bishops' Bible of 1572 and 1575 it is Englished "the pygmenians." In these last instances, it is clear that the translators had the idea that people of a certain race, foreign to Tyre, were intended, an idea not inconsistent with their being "valorous men" and "watchmen." And the Vulgate definitely defines them as "pygmies."

In considering this reference, it must be remembered that the pygmy tribes were well known in Egypt, if not in Asia Minor, long before the Christian era. Herodotus, born in Asia Minor a century after the time of Ezekiel, and Aristotle, who flourished a century later still, both mention pygmy races as inhabiting a region to the south-west of Egypt. And the Egyptian records quite coincide with the statements of these Greek writers. There is an inscription at Karnak, of the time of the Ptolemies (who ruled over Egypt during the three centuries preceding the birth of Christ), which states, with reference to the governor of Nubia: "The dwarfs of the southern countries come to him, bringing their tributes to his treasury." M. Edouard Naville, who quotes this inscription, remarks that possibly the dwarf tribes then lived much nearer Egypt than they do now. The same writer, an eminent Egyptologist, also refers to an interesting picture of three dwarfs in the festival-hall of Osorkon II., in the great temple of Bubastis, the city known to Ezekiel (xxx. 17) as Pibeseth. These dwarfs are described by a word which means "the police of a temple," and they are portrayed, each with a long wand in his hand, preceding several priests. "It seems rather strange," observes M. Naville, "to us who are accustomed to see in Roman Catholic churches beadles remarkable for their high and imposing stature, to think that in Egyptian temples the police duties were performed by dwarfs. Whether they had special qualities for this office we cannot say, but certainly they were not Egyptians; they belonged to a southern race." He adds that those dwarfs who are pictured as temple-vergers are "small, but not deformed"; in this latter respect differing in a marked degree from the usual dwarfs of ancient Egypt, who are represented, as M. Monceaux points out, with the physical peculiarities of existing African pygmies, grotesquely exaggerated.

Similar tribes of pygmy stature are found in the Malayan archipelago; and there are traces of such people, formerly, if not now, in practically every quarter of the globe, not excluding Europe. "Other dwarf races of humanity belonging to the white or the Mongolian species may have inhabited northern Europe in ancient times," observes Sir Harry Johnston, "or it is just possible that this type of pygmy negro which survives to-day in the recesses of inner Africa may even have overspread Europe in remote times." As a matter of fact, the bones of racial dwarfs have been found in various parts of Europe, and have been recently described by scientific observers, notably by Professor Kollman of Basel and Professor Thilenius of Breslau.

OPENING OF A NEW TRAINING COLLEGE.

THE largest training college in England was opened on September 29th by the Earl of Rosebery, who in a graceful speech said that it gave him a double pleasure to perform the function, because he acted not only as Chancellor of the University of London, but as a former chairman of the London County Council. But although these are the two bodies most directly responsible for the founding and maintenance of the college, a very important share is borne by the County Councils of Kent, Surrey, Middlesex, and the County Borough of Croydon, and the noble Earl, after referring to the keen disputes about various matters between these councils in the early days of their existence, testified to the extreme pleasure it gave him to see them all united in furthering the cause of education.

On the 29th June 1904 the Senate accepted an offer from the Worshipful Company of Goldsmiths to present to the University the buildings of the institution founded by them at New Cross in 1888, and since that date maintained by them as a Technical and Recreative Institute, together with an unoccupied site of about 4½ acres and an endowment of £5000 a year for five years. To this endowment the Company subsequently added a sum of £5000 to enable the University to carry on, in co-operation with the London County Council, "Evening Classes of a Polytechnic character" during the year 1904–05. It was understood that, at the end of that period, a new scheme for the utilisation of the buildings and endowment would come into operation.

The buildings, with approach, inner court, etc., cover between two and three acres of ground, and comprise a very large central hall, a library, a gymnasium, and a swimming-bath, as well as lecture and class rooms, laboratories, workshops, etc.

On the 23rd November 1904 the Senate approved a scheme for the management of the institution, which was to be known in future as "University of London, Goldsmiths' College." The management was to be entrusted to a delegacy, to be termed "The Goldsmiths' College Delegacy," which was to be appointed annually by the Senate, and to consist of eight members nominated by the Senate of London University, two each by the London County Council and the Goldsmiths' Company, one each by the County Councils of Kent, Surrey, Middlesex, and the County Borough of Croydon, together with the Principal of London University and the University Professor of Education.

The work of the College for the session 1905–06 will include (*a*) evening classes in chemistry, physics, and mathematics; (*b*) evening classes in engineering; (*c*) evening classes in connection with various building trades; (*d*) miscellaneous evening classes, mostly domestic (for women) and gymnastic; (*e*) an art school (day and evening); (*f*) a day training department for 500 students, of whom 250 will be admitted in the first year.

The Principal of the Day Training department is the Warden of the College, Mr. W. Loring, M.A., late Fellow of King's College, Cambridge, and the Vice-Principals are Mr. T. Raymont, M.A., and Miss Caroline Graveson, B.A.

This large and important department, now commencing the first session of its existence, is a day training college (elementary) recognised by the Board of Education, and will provide accommodation for 500 "two-year" students (Chapter II. of the Regulations of the Board of Education for the Training of Teachers), of whom about one half have been admitted already, and the remainder will be admitted in 1906.

The first year of the course will be devoted mainly to general education, and the second year mainly to professional instruction.

The principal subjects taught during the first year will be English language and literature; English history; geography (physical and historical); French and German (as alternatives); elementary mathematics; elementary science. The principal subjects during the second year will be the theory, history, and practice of education; school hygiene; and continuation of the literary studies (English and foreign) with shorter hours. Manual training (for men), domestic subjects (for women), drawing, music, voice-management, and physical training (including gymnastics and swimming), will be taken in both first and second years.

The examination for which students will be prepared, and which will take the place of the certificate examination of the Board of Education, will be one conducted by the University of London, but not constituting a recognised stage in the course for a degree (paragraph 27 (b)) of the regulations for the training of teachers.

Nearly all the places in the Training College were engaged in advance by the Kent, London, Middlesex, and Surrey County Councils and the Croydon County Borough Council, the Goldsmiths' College Delegacy placing no restrictions on the choice of candidates for admission other than those imposed by the regulations of the Board of Education, but reserving the right of rejecting particular candidates on medical or other grounds. The Councils are, for the present, awarding the places free of charge.

A hostel for women students, and one for men students, will shortly be provided by the Kent and Surrey County Councils respectively. Students nominated by these Councils, whose homes are too far distant from the College to permit of their living at home during the College terms, will, as a rule, be expected to reside in a hostel. A list of recognised lodgings is kept for students who can neither live at home nor be accommodated in hostels. It is hoped that additional hostels will be established in the near future, and that it will be unnecessary for any students to live in lodgings.

Arrangements have been made for a midday dinner at the College, at which all students in the training department are expected to be present.

The day training department has been established with the help of a subsidy from the five County and County Borough Councils represented on the delegacy, and the entire delegacy will be responsible for the management of it. But the remaining branches of the work of the College are subsidised by the London County Council alone, and the representatives of other County and County Borough Councils will have no vote on any question relating exclusively to them.

A GLIMPSE OF NEW ENGLAND.

A PAGE FROM A LONDON TEACHER'S HOLIDAY NOTE-BOOK.

Monday Evening, July 24, 1905.—Eight days had passed since we had lost sight of the Irish coast, under the glory of the setting sun. The Atlantic had been in one of her best summer moods—gay and sparkling in the sunshine under the dome of blue, with never a hint of her latent potentiality for mischief, and the long restful days had been a delight to body and mind; but as fatigue vanished like a dream under the influence of the brightness, there arose the longing familiar to all who go down to the sea in ships, to see some indication of the "other side."

It was the last evening of the voyage, and to me the sunset hour on an Atlantic liner going westwards in midsummer is the most delightful of the whole day.

The majesty of the summer sunset over the sea is familiar enough to all, but there is a new sensation which arises as one feels the throb of the huge vessel ploughing her way along the track of light—directly heading for the slowly sinking orb.

But the supreme moment comes when, on a cloudless evening, the sun begins to dip below the horizon and the golden archway of the West appears at the end of the radiant path across the waters, inviting those who will to enter the Elysian fields beyond. But how quickly this phase passes—yielding place to the encircling radiance of the after-glow, then the rising of the moon and the unveiling of the starry sky.

The voyage was practically over, as we were due to reach port by seven o'clock the next morning. Everybody was astir betimes, and from the port-hole the sun could be seen like a crimson ball, just above the horizon, but half hidden by a veil of mist, which, to our dismay, speedily thickened, and the ominous stopping of the machinery roused us to the fact that we were fogbound just outside the harbour. One accepts the fog in mid-ocean with a philosophic reserve, much as the Londoner accepts it in late autumn, but just outside the harbour there was distinctly a suspicion of malice prepense, which stirred the most phlegmatic of the breakfast party.

The cheerful rumour that we might possibly be detained for forty-eight hours did not take long to spread, and the fog looked more sulky and immovable than before.

Three—four—five hours passed, and at last, when hope was fading, the light broke through, and we watched the curtain rise over Boston harbour with something of the zest with which little children watch a transformation scene.

New York is more imposing than Boston, even in the far distance, and the distinctive note struck by "Liberty enlightening the world" is here missed; but the scene is very picturesque, and the flavour of the Boston Tea Party of December 1773 adds a piquancy which is unique.

"Bad news from George on the English throne:
'You are thriving well,' said he;
'Now by these presents be it known,
You shall pay us a tax on tea:
'Tis very small—no load at all—
Honour enough that we send the call.'

'Not so,' said Boston, 'good my lord,
We pay our governors here
Abundant for their bed and board
Six thousand pounds a year.
Your Highness knows our homely word:
Millions for self-government,
But for tribute never a cent!'

The cargo came! and who could blame
If *Indians* seized the tea,
And chest by chest let down the same
Into the laughing sea?
For what avail the plough or sail
Or land or life, if freedom fail?"

Sea and sky were blue in the noon sunshine; in the distance on either side could be seen the summer resorts on the irregular and picturesque shores; all around were numberless islands of fantastic shape, and far ahead, dominating the city, was the gilded dome of the State House.

In front of us a big liner was heading her way to reach the dock before us, and we kept passing the various kinds of craft (from an American man-of-war, in all the glory of the new paint, to the dirty little cutters) which only a nautical expert could classify and name.

A perky little tug, bearing aloft the gilded eagle, which looked ready to screech, and flying the Stars and Stripes, soon brought the Customs' officers, and then our vessel slowly made her way to the dock, whilst we with straining eyes strove to distinguish the familiar faces of old friends amongst the crowd awaiting our arrival.

To those of us who were thus welcomed, it was like reaching the end of the journey, even though there yet remained hundreds of miles to be traversed, but to the others the landing was but an episode in the day's round.

I had long wanted to see Boston. My earliest recollections take me back to vivid stories of the conflict between the North and the South, and the names of Lincoln and Grant, of Lee and Stonewall Jackson were interwoven in my memory with the triple refrain of "John Brown's body lies mouldering in the ground, but his soul goes marching on"—long before I had become acquainted with the Ancient Britons.

It is easy to see that it was not a far cry to the story of the fight for American Independence, so that, in later years, the reign of George III. had a strange fascination for me, when I should have been engrossed in the mysteries of the Heptarchy or of the Wars of the Roses.

I am of those who love cities, and as we drove through the narrow, crooked streets of the old portion of the city my spirits rose.

The story runs that the present streets follow the lines of the old cow-paths from the common, and it was hard to believe, after one's experience of the right-angled thoroughfares of the modern cities of the Middle Western States, that this was an American city, till one caught sight of some of the familiar features: the elevated railway, the electric cars—here bearing the names of Concord, Cambridge, Lexington, Arlington—the postmen and policemen in their summer suits of light greyish-blue, the drug stores with the soda fountains, the newspaper office windows covered with placards, the little lads crying "*Saturday Evening Post*," here and there glimpses of high square buildings, and here and there "Old Glory" waving in the summer breeze.

But Boston is too long a story to deal with here.

The next morning we went to Plymouth, which lies some forty miles to the south.

It was a perfect July morning, and soon after leaving Boston we passed through delightful country, with small towns and villages, farmhouses and orchards dotting the route, and then the train ran some distance along the shore till we reached our destination.

Plymouth is a pleasant little town, and seems to take its honours very quietly. The main street, bearing a distant family resemblance to many such in the small towns of the Mother Country, was almost deserted this summer morning, but it needed nothing more startling than a small circus procession, announcing (to the tune of drum and fife or instruments equally melodious) the glory of a coming show on the morrow, to bring some of the inhabitants, especially the younger members of the community, to their doors, so that, for a few minutes at least, we saw the place alive.

In rambling through the side streets one's attention was soon drawn to several fine old houses, dating back to comparatively early days of the settlement. There was something curiously reminiscent of old English and of old Dutch villages, a combination of the two which was difficult to define.

The quaint dignity of the houses, giving an impression of simplicity, strength, and age; the heavy doorways with knockers (which much impressed one of my companions, a small boy from the West, to whom a door-knocker was a curiosity); the big shady trees, almost overshadowing house and lane, and giving a delicious sense of coolness, whilst the light and shade through the open doorways called to mind the scenes that the old Dutch artists loved to paint.

Here, too, we saw some pretty old gardens, full of bright flowers, which forcibly recalled familiar scenes in Old England.

Then we made our way to the beach, where in December 1620 the passengers of the *Mayflower* set foot on the land which was to be their new home.

The upper portion of the rock known the world over as "Plymouth Rock," was in 1774 moved into the centre of the town, and there it remained till 1880, when it was moved back to its original location. Over it there now stands a granite canopy about thirty feet high, and between the piers on each side is an open arch, so that the stone is visible from all sides.

The only marking on the stone is the date of the landing, in large figures.

As we stood by the rock, the scene before us was bright and peaceful, and the water in the bay lay sparkling in the noon sunshine. Right ahead was Clark's Island, where the Pilgrims, heedless of the exigencies of their position, spent their first Sabbath in rest and worship. In the distance on the hillside stood the tall monument to Miles Standish, the "Captain of Plymouth," in the close vicinity of which is the ancestral farm of the Aldens, where the name of Priscilla serves to keep green the Puritan maiden's story.

The scene was so tranquil that it was hard to imagine what it looked like on that memorable winter morning when, worn-out with the three months' voyage, the little party landed on the desolate and inhospitable shore.

Within a stone's throw of the rock is a very pathetic spot, where on the hillside, during that first hard winter, half the brave men and women, who had left the Old World full of high hopes, were laid to rest, victims of

This large and important department, now commencing the first session of its existence, is a day training college (elementary) recognised by the Board of Education, and will provide accommodation for 500 "two-year" students (Chapter II. of the Regulations of the Board of Education for the Training of Teachers), of whom about one half have been admitted already, and the remainder will be admitted in 1906.

The first year of the course will be devoted mainly to general education, and the second year mainly to professional instruction.

The principal subjects taught during the first year will be English language and literature; English history; geography (physical and historical); French and German (as alternatives); elementary mathematics; elementary science. The principal subjects during the second year will be the theory, history, and practice of education; school hygiene; and continuation of the literary studies (English and foreign) with shorter hours. Manual training (for men), domestic subjects (for women), drawing, music, voice-management, and physical training (including gymnastics and swimming), will be taken in both first and second years.

The examination for which students will be prepared, and which will take the place of the certificate examination of the Board of Education, will be one conducted by the University of London, but not constituting a recognised stage in the course for a degree (paragraph 27 (b)) of the regulations for the training of teachers.

Nearly all the places in the Training College were engaged in advance by the Kent, London, Middlesex, and Surrey County Councils and the Croydon County Borough Council, the Goldsmiths' College Delegacy placing no restrictions on the choice of candidates for admission other than those imposed by the regulations of the Board of Education, but reserving the right of rejecting particular candidates on medical or other grounds. The Councils are, for the present, awarding the places free of charge.

A hostel for women students, and one for men students, will shortly be provided by the Kent and Surrey County Councils respectively. Students nominated by these Councils, whose homes are too far distant from the College to permit of their living at home during the College terms, will, as a rule, be expected to reside in a hostel. A list of recognised lodgings is kept for students who can neither live at home nor be accommodated in hostels. It is hoped that additional hostels will be established in the near future, and that it will be unnecessary for any students to live in lodgings.

Arrangements have been made for a midday dinner at the College, at which all students in the training department are expected to be present.

The day training department has been established with the help of a subsidy from the five County and County Borough Councils represented on the delegacy, and the entire delegacy will be responsible for the management of it. But the remaining branches of the work of the College are subsidised by the London County Council alone, and the representatives of other County and County Borough Councils will have no vote on any question relating exclusively to them.

A GLIMPSE OF NEW ENGLAND.

A PAGE FROM A LONDON TEACHER'S HOLIDAY NOTE-BOOK.

Monday Evening, July 24, 1905.—Eight days had passed since we had lost sight of the Irish coast, under the glory of the setting sun. The Atlantic had been in one of her best summer moods—gay and sparkling in the sunshine under the dome of blue, with never a hint of her latent potentiality for mischief, and the long restful days had been a delight to body and mind; but as fatigue vanished like a dream under the influence of the brightness, there arose the longing familiar to all who go down to the sea in ships, to see some indication of the "other side."

It was the last evening of the voyage, and to me the sunset hour on an Atlantic liner going westwards in midsummer is the most delightful of the whole day.

The majesty of the summer sunset over the sea is familiar enough to all, but there is a new sensation which arises as one feels the throb of the huge vessel ploughing her way along the track of light—directly heading for the slowly sinking orb.

But the supreme moment comes when, on a cloudless evening, the sun begins to dip below the horizon and the golden archway of the West appears at the end of the radiant path across the waters, inviting those who will to enter the Elysian fields beyond. But how quickly this phase passes—yielding place to the encircling radiance of the after-glow, then the rising of the moon and the unveiling of the starry sky.

The voyage was practically over, as we were due to reach port by seven o'clock the next morning. Everybody was astir betimes, and from the port-hole the sun could be seen like a crimson ball, just above the horizon, but half hidden by a veil of mist, which, to our dismay, speedily thickened, and the ominous stopping of the machinery roused us to the fact that we were fogbound just outside the harbour. One accepts the fog in mid-ocean with a philosophic reserve, much as the Londoner accepts it in late autumn, but just outside the harbour there was distinctly a suspicion of malice prepense, which stirred the most phlegmatic of the breakfast party.

The cheerful rumour that we might possibly be detained for forty-eight hours did not take long to spread, and the fog looked more sulky and immovable than before.

Three—four—five hours passed, and at last, when hope was fading, the light broke through, and we watched the curtain rise over Boston harbour with something of the zest with which little children watch a transformation scene.

New York is more imposing than Boston, even in the far distance, and the distinctive note struck by "Liberty enlightening the world" is here missed; but the scene is very picturesque, and the flavour of the Boston Tea Party of December 1773 adds a piquancy which is unique.

"Bad news from George on the English throne:
'You are thriving well,' said he;
'Now by these presents be it known,
You shall pay us a tax on tea:
'Tis very small—no load at all—
Honour enough that we send the call.'

'Not so,' said Boston, 'good my lord,
We pay our governors here
Abundant for their bed and board
Six thousand pounds a year.
Your Highness knows our homely word:
Millions for self-government,
But for tribute never a cent!'

The cargo came! and who could blame
If *Indians* seized the tea,
And chest by chest let down the same
Into the laughing sea?
For what avail the plough or sail
Or land or life, if freedom fail?"

Sea and sky were blue in the noon sunshine; in the distance on either side could be seen the summer resorts on the irregular and picturesque shores; all around were numberless islands of fantastic shape, and far ahead, dominating the city, was the gilded dome of the State House.

In front of us a big liner was heading her way to reach the dock before us, and we kept passing the various kinds of craft (from an American man-of-war, in all the glory of the new paint, to the dirty little cutters) which only a nautical expert could classify and name.

A perky little tug, bearing aloft the gilded eagle, which looked ready to screech, and flying the Stars and Stripes, soon brought the Customs' officers, and then our vessel slowly made her way to the dock, whilst we with straining eyes strove to distinguish the familiar faces of old friends amongst the crowd awaiting our arrival.

To those of us who were thus welcomed, it was like reaching the end of the journey, even though there yet remained hundreds of miles to be traversed, but to the others the landing was but an episode in the day's round.

I had long wanted to see Boston. My earliest recollections take me back to vivid stories of the conflict between the North and the South, and the names of Lincoln and Grant, of Lee and Stonewall Jackson were interwoven in my memory with the triple refrain of "John Brown's body lies mouldering in the ground, but his soul goes marching on"—long before I had become acquainted with the Ancient Britons.

It is easy to see that it was not a far cry to the story of the fight for American Independence, so that, in later years, the reign of George III. had a strange fascination for me, when I should have been engrossed in the mysteries of the Heptarchy or of the Wars of the Roses.

I am of those who love cities, and as we drove through the narrow, crooked streets of the old portion of the city my spirits rose.

The story runs that the present streets follow the lines of the old cow-paths from the common, and it was hard to believe, after one's experience of the right-angled thoroughfares of the modern cities of the Middle Western States, that this was an American city, till one caught sight of some of the familiar features: the elevated railway, the electric cars—here bearing the names of Concord, Cambridge, Lexington, Arlington—the postmen and policemen in their summer suits of light greyish-blue, the drug stores with the soda fountains, the newspaper office windows covered with placards, the little lads crying "*Saturday Evening Post*," here and there glimpses of high square buildings, and here and there "Old Glory" waving in the summer breeze.

But Boston is too long a story to deal with here.

The next morning we went to Plymouth, which lies some forty miles to the south.

It was a perfect July morning, and soon after leaving Boston we passed through delightful country, with small towns and villages, farmhouses and orchards dotting the route, and then the train ran some distance along the shore till we reached our destination.

Plymouth is a pleasant little town, and seems to take its honours very quietly. The main street, bearing a distant family resemblance to many such in the small towns of the Mother Country, was almost deserted this summer morning, but it needed nothing more startling than a small circus procession, announcing (to the tune of drum and fife or instruments equally melodious) the glory of a coming show on the morrow, to bring some of the inhabitants, especially the younger members of the community, to their doors, so that, for a few minutes at least, we saw the place alive.

In rambling through the side streets one's attention was soon drawn to several fine old houses, dating back to comparatively early days of the settlement. There was something curiously reminiscent of old English and of old Dutch villages, a combination of the two which was difficult to define.

The quaint dignity of the houses, giving an impression of simplicity, strength, and age; the heavy doorways with knockers (which much impressed one of my companions, a small boy from the West, to whom a door-knocker was a curiosity); the big shady trees, almost overshadowing house and lane, and giving a delicious sense of coolness, whilst the light and shade through the open doorways called to mind the scenes that the old Dutch artists loved to paint.

Here, too, we saw some pretty old gardens, full of bright flowers, which forcibly recalled familiar scenes in Old England.

Then we made our way to the beach, where in December 1620 the passengers of the *Mayflower* set foot on the land which was to be their new home.

The upper portion of the rock known the world over as "Plymouth Rock," was in 1774 moved into the centre of the town, and there it remained till 1880, when it was moved back to its original location. Over it there now stands a granite canopy about thirty feet high, and between the piers on each side is an open arch, so that the stone is visible from all sides.

The only marking on the stone is the date of the landing, in large figures.

As we stood by the rock, the scene before us was bright and peaceful, and the water in the bay lay sparkling in the noon sunshine. Right ahead was Clark's Island, where the Pilgrims, heedless of the exigencies of their position, spent their first Sabbath in rest and worship. In the distance on the hillside stood the tall monument to Miles Standish, the "Captain of Plymouth," in the close vicinity of which is the ancestral farm of the Aldens, where the name of Priscilla serves to keep green the Puritan maiden's story.

The scene was so tranquil that it was hard to imagine what it looked like on that memorable winter morning when, worn-out with the three months' voyage, the little party landed on the desolate and inhospitable shore.

Within a stone's throw of the rock is a very pathetic spot, where on the hillside, during that first hard winter, half the brave men and women, who had left the Old World full of high hopes, were laid to rest, victims of

exposure to the bitter cold, of anxiety, and of insufficiency of food and shelter. So fearful were the survivors that the Indians should see the graves and should realise the heavy death-roll amongst the Pilgrims, that they levelled the graves and planted corn thereon.

In the heart of Plymouth stands what is known as Burial Hill, the first cemetery in New England. Here are the resting-places of many of the early settlers, though many of these graves are unmarked by any headstones, as these had to be imported from England at a heavy cost, and in those days of hardship and of struggle, the Pilgrims had little time and money to spend on such memorials. It has been left, in many cases, to their descendants to do this simple honour.

One or two curious epitaphs mark the graves of little children :—

"He glanced into our world to see
A sample of our miserie."

"The fathers have eaten sour grapes and
The children's teeth are set on edge."

"He listened for awhile to hear
Our mortal griefs: then tuned his ear
To angel harps and songs, and cried
To join their notes celestinl, sigh'd and died."

The stone erected to Tabitha Plasket in 1807 is not without interest. The story runs (according to the local guide-book) that Tabitha, during her widowhood, taught a private school for small children, and at the same time, as was the custom of her day, carried on her employment of spinning.

Her mode of punishment was to pass skeins of yarn under the arms of the little culprits and hang them up on nails.

The guide-book adds, in quaint simplicity, that a suspended row was a ludicrous sight.

This worthy dame wrote her own epitaph, which attracts considerable attention, and which runs as follows :—

"Adieu, vain world, I've seen enough of thee,
And I am careless what thou sayest of me;
Thy smiles I wish not,
Nor thy frowns I fear,
I am now at rest, my head lies quiet here."

Of late years the local Pilgrim Society has made great efforts to preserve places in the vicinity which are closely connected with the early settlers, and a very interesting collection of relics is to be found in Pilgrim Hall, a rough granite building, with columns and portico, which give it a marked resemblance to many eighteenth-century English churches.

On a grass plot in front is a marble slab, bearing the words of the memorable compact made in the cabin of the *Mayflower*, and the names of those who signed it. Within the hall are many valuable documents, pictures, and objects, throwing light on the early days. Among the papers is a parchment commission from Oliver Cromwell, Lord Protector of England, appointing Governor Winslow as one of the arbitrators between Great Britain and the United Provinces of Holland, and, among other exhibits, are the capacious chairs of Elder Brewster and Governor Carver, which were brought over in the *Mayflower*; the cradle of Pilgrim White, the first Plymouth baby; and the famous sword of Miles Standish, to which the brusque captain made reference in his memorable interview with John Alden :—

"Look at these arms," he said, "the warlike weapons that hang here,
Burnished and bright and clean as if for parade or inspection!
This is the sword of Damascus I fought with in Flanders."

"This trusty sword of Damascus, curved at the point and inscribed with its mystical Arab sentence," is believed to date back to at least two or three centuries before the Christian era, and is therefore of great value, apart from its local connection.

The translation of the inscription runs as follows :—

"With peace God ruled His creatures, and with the judgment of His arms, He troubled the mighty of the wicked."

It would be unfair to leave Plymouth without a parting reference to the fine old Courthouse, to her many churches, indicative of many shades of religious thought, and to the National Monument to the Forefathers, a vast pile of carved granite, surmounted by a very impressive figure of Faith, and decorated by a series of alto reliefs, representing scenes in the history of the Pilgrims. But more suggestive than granite block or musty parchment deed, were the contents of a quaint old store, which bore the sign of "The Old Curiosity Shop," where we found a miscellaneous collection of old chairs, tables, and cradles, spinning wheels and kitchen utensils, old candlesticks, tinder-boxes and heavy fire-irons, all relics of the old homes. Doubtless many of these things had been treasured from across the sea, and one could hardly help picturing the scene of embarkage, when the household goods of the various families were put aboard the *Mayflower*.

It seems almost pathetic that, while such infinite care is taken to preserve every relic connected with the momentous voyage, nothing is known of the fate of the historic old boat.

The following day we went to Concord. Though many years have passed since I first visited Stratford-on-Avon, Grasmere and Rydal, Abbotsford and Melrose, the memory of those days is unfading. There is something very revealing about the associations of a man's home, particularly when it has old family associations, so that one feels that the environment has been no mean factor in the conscious and unconscious development of the man and his inherited traditions. The writer seems so much more real: there is a new note in his song, and fresh light falls on many a well-known passage when one has wandered along the lanes and by familiar paths, and has seen the old homestead and those of his friends, especially so when the circle has included such interesting personalities as Nathaniel Hawthorne, Henry Thoreau, Bronson Allcott, Margaret Fuller, and Ellery Channing.

Only a few days before I had been talking with a famous American divine, who vividly remembered hearing Emerson lecture when in his prime, and he had been telling me of the far-away, dreamy quietness which seemed the very essence of his individuality.

Every page of his essays bears the impression of this serenity, and I felt strangely hushed as the train passed Walden Water, with its memories of Thoreau, and then drew into the little station of Concord. On the preceding day at Plymouth, there was a certain vigour in the atmosphere—something in the fresh sea-

breeze and the sunshine which seemed akin to the old pioneers and the strenuousness with which they converted their dreams of Liberty into a stern living reality, and one felt it, even on a July noonday; but here all was subdued, and it seemed as if the place was not only carpeted, but canopied with silence. Concord seems to belong to the past, and the few signs of human life seemed discordant, as though refusing to yield to the spell.

From the station we drove through level shady lanes, catching on either side glimpses of white houses, with pleasant verandahs and smooth lawns, and thence through the peaceful main street to a little open square in the heart of the town, known as Monument Square, from the granite obelisk which bears the name of the Concord soldiers who fell in the Civil War. On one side of the square stood the old Town House, from whose turret the bell rang out that called the farmers to arms on that historic morning of April 1775, and close by, the old houses still stand in which the chief stores of arms and provisions had been gathered through the preceding winter. Opposite the monument are some fine spreading elms, one of which is closely associated with the Emerson family. Here, in 1775, the grandfather of Ralph Waldo addressed the patriots; in 1861 Ralph Waldo spoke to the men who were going forth to fight in the Civil War; and recently, at the time of the Spanish-American War, it was his son who maintained the family tradition.

Still through shady lanes, we continued our way till we reached an unpretentious two-storied house standing at the end of a long avenue of once stately, but now decaying, trees.

This house was built just before the Revolution by the Rev. William Emerson, then the minister of Concord, to whom reference has been made, and from its windows he saw the opening skirmish.

In this house Emerson spent a considerable part of his boyhood, and here he wrote his first published essay, "Nature," and some of his earlier poems, but the house has been immortalised by Hawthorne, for it was in this old manse that he spent his honeymoon, and later gathered those "mosses of mystic hue" which were the first-fruits of his imaginative genius.

It was of this house that Emerson wrote, "My house stands in low land, with limited outlook and on the skirts of the village. But I go with my friend to the shore of our little river, and with one stroke of the paddle I leave the village politics and personalities, yes, and the world of villages and personalities, and pass into a delicate realm of sunset and moonlight, too bright almost for spotted man to enter without novitiate and probation."

Through a little lane we reached the river and stood on the North Bridge. I have just come across C. W. Curtis' account of a visit to Concord, written in 1853, and the picture is so accurate that I quote it:—

"The Concord River is a languid shallow stream that loiters through broad meadows, which fringe it with rushes and long grasses. Its sluggish current scarcely moves the autumn leaves showered upon it by a few maples that lean over Assabeth—as one of its branches is named. Yellow lily-buds and leathery lily-pads tessellate its surface, and the white water-lilies, pale, proud ladies of Shalott, bare their bosoms to the sun in the seclusion of its distant reaches. . . . Then it dreams on towards the Merrimac and the sea."

It seems almost the irony of fate that the Rebellion broke out in this peaceful spot. On one side of the little bridge were the British soldiers, and on the other the "embattled farmers," and close at hand, below the old stone wall, rest the first of the British soldiers who lost their lives in the great struggle. An obelisk on one side of the river bears the inscription that "Here in 1775 was made the first forcible resistance to British aggression," and at the opposite side stands a statue of a Minute Man, which was unveiled on the centenary of Concord fight.

For the dedication Emerson wrote a hymn, the first stanza of which is engraved upon the pedestal—

> "By the rude bridge that arched the flood,
> Their flag to April's breeze unfurled,
> Here once the embattled farmers stood,
> And fired the shot heard round the world."

At the other end of the little town on the road to Lexington, and within a few yards of each other, stand three houses of special interest.

The square white one at the corner is the house where Emerson lived for nearly fifty years, and the room to the right on entering is the study. His daughter still lives there, and the house remains as in her father's lifetime.

On the opposite side of the road is "Orchard House," once the home of the Allcotts. It was here in "Apple Slump," as she called it, that Louisa wrote *Little Women* and the other delightful books, and, in the barn close by, she and her sisters played their first games at theatricals. The next house is "Wayside," at one time the home of the Allcotts, but later the residence of Hawthorne.

There is a curious square tower at the top of "Wayside," which Hawthorne built for his study. In order to prevent disturbance, he arranged that the only entrance to the room should be a trap-door, reached by a ladder. This ladder Hawthorne used to draw into the study, and then he placed his chair and table upon the closed door, thus securing peace.

On the slope of the little hillside between "Apple Slump" and "Wayside" are the larches which Hawthorne planted, and beneath can be seen the pathway worn by his restless feet. But the little group of Concord men and women who played so important a part in the world of thought, not only in New England, but throughout the English speaking world during the middle of last century, is now silent, and one feels that it is in harmony with the eternal fitness of things that their bodies rest in peace under the pines in the little graveyard of Sleepy Hollow, on the outskirts of the town with which their names will always be associated.

The birds were singing and the leaves were rustling in the summer breeze as we wandered through the paths.

Here there was no crowding, and the very spaciousness of the family resting-places seemed to add to the feeling of peace. The headstones were of the simplest form, and the sign of the cross, so familiar in a God's acre in old England, was not to be seen.

No meaningless epitaphs were here, nothing, as a rule, beyond the name and date of the sleeper, and in many cases even the name had yielded place to the simplicity of "Father and Mother."

At the top of a small hill, under the pines, surrounded by his family and his friends, sleeps Emerson. A rough boulder of rose quartz marks the spot, and on

a small bronze tablet affixed is the following inscription:—

"RALPH WALDO EMERSON.
BORN IN BOSTON MAY 25TH, 1803.
DIED IN CONCORD APRIL 27TH, 1882.

The passive master lent his hand
To the vast soul that o'er him planned."

Next to the Emerson plot are the graves of the Hawthorne family, surrounded by a low hedge of arbor vitæ, and immediately opposite rest the Allcott family and Thoreau.

As we made our way back to the station, we passed the house of William Ellery Channing—"the poet's poet"—and the words of his well-known symphony flashed into my mind:—

"To live content with small means: to seek elegance rather than luxury, and refinement rather than fashion: to be worthy, not respectable, and wealthy, not rich: to study hard, think quietly, talk gently, act frankly: to listen to stars and birds, to babes and sages with open heart: to bear all cheerfully, do all bravely, await occasions, hurry never—in a word, to let the spiritual, unbidden, and unconscious grow up through the common. This is to be my symphony."

In London this is a hard saying, but at Concord it seemed to enshrine the very spirit of the place.

EDUCATION IN FOREIGN LANDS.

Switzerland.—The visitor to Zurich looking across from the Limmat Quai will have probably noticed a long, low building of mean aspect, bearing the inscription, "Pestalozzianum." This contains a permanent exhibition of school appliances, and a room devoted to memorials and relics of the great pedagogue of whom Switzerland is justly proud. The managing body of the Institution has been passing through a somewhat anxious time, since the construction of a new line of tramways has demanded as a sacrifice the demolition of the Wollenhof, in which the Pestalozzi Exhibition is situated. So far the demolition has only been partially carried out, necessitating for a time the compression of the exhibits into a smaller space. The Town Council of Zurich has come to the assistance of the Pestalozzianum in a very opportune way. The programme for the building of schools during the period 1905–1910 includes the removal of the Higher Girls' School from its present locality in the old Karolinum near the Grossmünster to newer premises. The building to be vacated has been offered to and accepted by the governing body of the Institute, thereby providing it with a building well adapted for its purposes, and one which will afford the room for expansion which was so urgently needed. The report of the Pestalozzianum for the past year bears testimony to the self-sacrifice and devotion which those responsible for its management have displayed during many years. The collections are continually growing, and during the past year no less than 800 additions by way of gift have been made to it. These have included, amongst others, zoological and botanical preparations, and apparatus for wireless telegraphy. The library of pedagogic works and journals, of which 116 come from abroad, has received numerous visitors, who displayed a particular interest in works on the psychological study of children, and on the reform teaching of drawing. Four special exhibitions have been held during the year, and the Institute was represented at the International School Congress of Hygiene held in Nuremberg in April 1904. A monthly account of the work of the Pestalozzianum has also been published as a supplement to the *Schweizerische Lehrerzeitung*. For a body which commands an annual income of only about £630, made up of subscriptions of members, and subventions from the town, the Canton, and the Government, an immense amount of useful work is done.

Japan.—The most notable of Japan's educational institutions is the University for Women, founded at Tokio five years back. The idea of such a university was vigorously opposed by all who were in any way attached to the traditions of the past, but ample subscriptions came in, and adequate buildings were constructed on a site given by the Mitsui family. Even before the opening of the university, requests for admission came in in such numbers that several hundred intending students could not be received. The university counts now from 600 to 700 students. The number of men killed in the recent war will perhaps have the effect of still further increasing the number of students of the university, as many women will probably have to renounce the idea of marriage, and depend on their own efforts for support. The staff comprises 49 professors, 9 tutors, and 9 lecturers. All the professors are natives, with the exception of two from England and one from the United States. The obligatory studies are psychology, child-study, ethics, hygiene, puericulture, and the history of the fine arts. To these are added Japanese etiquette, and the art of arranging flowers. Other subjects of study are chemistry, physics, domestic economy, Asiatic history, philosophy, the laws and constitution of Japan, English, music, drawing, and painting. Only a portion of the students are resident. These act in turn as housewives, and, under the tuition of a lady professor, learn how to manage a household. One of the dormitories is fitted up according to English ideas. Students can on their own request be admitted to it, and under the guidance of a teacher be initiated into English modes of life.

Prussia. — An unpleasant light on the backward social condition of many parts of Eastern Prussia is thrown by a circular issued to school authorities and teachers by the Governor of the Königsberg district. Teachers are requested to do all they can to stem the increasing indulgence in spirits among children. Children who persist after being cautioned in drinking spirits are to be punished, and *cases of drunkenness amongst school children*, or of the bringing of alcoholic liquors into school, are to be immediately reported to the Government. The privilege of employing children who are under the guardianship of the community is to be withdrawn from all employers who offer spirits to such children. Where parents are in the habit of giving spirits to their children, proceedings are to be instituted against them for the purpose of placing their children under guardianship.

In every country on the Continent where primary education is well organised, the co-operation of the teacher is being sought to combat the evils of drinking. Sometimes this results in placing the teacher in the position of choosing which of two contradictory duties laid on him by the State he shall fulfil. The dilemma is amusingly put in a letter from a teacher to the

Œsterreichische Lehrerzeitung: "So then I am to fight against the use of alcohol; my School Committee will have it so. But when I am quite alone within my own four walls, and the blinds are closely drawn, I laugh as heartily as my reverence for the wisdom of my superiors will permit. I say nothing of the ancient Germans, who always before parting took one glass more, and who nevertheless were lusty fellows, taking an equal joy in working and in fighting. True, they did not sit ninety-three thick in a narrow schoolroom on seats designed for any purpose but that of being sat on, in air befouled, and with a light which served to mark but not to dispel the darkness. It was not alcohol which took the marrow out of their bones—but that is not my point. Would you like to know why I am laughing? I have lately been instructed to use my influence to get the vine-dressers to use American sprays for the purpose of extirpating the *phylloxera*. So then I am to save the wine industry, and preach against the use of wine. And if I say a word against wine, the vine-dressers, when they are going home a little merry, will break all my windows; and the School Superintendent, who keeps a drop of good wine in his cellar, will never pardon me if I refuse to take a glass when I call on him. How can I instil into my children a horror of wine, when the culture of the vine is what gives them daily bread? So now you have the reason why I laugh—a submissive laugh, remember."

German Empire.—Two of the questions which at the present time most deeply interest German teachers are those of the employment of women as teachers and religious instruction in schools. Until late years comparatively few women were employed in teaching, and those only in subordinate positions. Some States to the present day employ no women teachers. The growth of large industrial and commercial centres has opened up more promising careers for young men, and it is becoming increasingly difficult in Germany to get men teachers. As yet, however, the head-mistress does not exist in Germany, but everywhere the *pros* and *cons* of the employment of women as teachers are being debated on psychologic, social, and economic grounds.

The question of religious teaching is an outcome of the subjection of the primary teacher to the local clergyman, which is the rule in Germany. While the higher criticism has caused most intellectual circles to look upon the Bible narratives from a new standpoint, the religious teaching in the schools, generally speaking, represents the attitude of forty or fifty years ago towards the facts of Scripture history. During the last few months a fire which has been smouldering for some time broke out amongst the teachers, in consequence of the action of an ultra-orthodox School Inspector in Bremen. He has employed disciplinary measures against teachers suspected of liberal views in religion, or who have argued for the separation of religious and secular instruction, and latterly summoned before him a teacher who had written anonymously a book with the sufficiently bold title of *Leaves from the Diary of God*, and categorically examined him as to his beliefs. The teachers promptly brought the general question of the methods of this School Inspector before the Town Council, where they found a majority of supporters. The Town Council resolved to petition the Senate to take steps to bring the religious teaching in schools into conformity with modern life. A mass meeting of the Bremen teaching body was held, in which a resolution was by a great majority carried, affirming the desirability of banishing religious teaching from the schools. The growing restlessness of German teachers under clerical rule is also evidenced by a resolution which was passed at the last annual meeting of the teachers of Oldenburg. The teachers asked that in place of the old School Law of 1855, a new one should be introduced, freeing the School from the Church, and giving guarantees for its development in accordance with modern requirements. It should be remarked that the schools of Oldenburg are strictly confessional—that is to say, denominational—and are completely under the rule of the Church.

France.—The *Ecole Nouvelle* gives publicity to a very interesting circular sent to the pedagogic press by Herr Kurnig of Heilbronn. Herr Kurnig is the founder of an International Centre for collecting facts relating to education in various lands. He has set before himself the exalted aims of establishing pacific relations between various countries, and giving unity to the methods employed throughout the world. To internationalise pedagogy in practice as well as in theory, and to make it the mission of the school to work for universal disarmament, may seem at present a dream, but it is a dream worth the struggle to realise.

MR. ALFRED D. G. BARRIBALL, B.A.,

Vice-Principal of the Westminster Training College.

MR. ALFRED D. G. BARRIBALL, B.A., the newly appointed Vice-Principal of the Westminster Training College, is of Cornish descent though born in London, and is one of a family, four of whom entered the teaching profession, all passing First Class at the Scholarship Examination.

He became a scholar in the Higher Grade School, Mintern Street, New North Road, at the age of ten, Mr. John H. Devonshire being the head-master; and at the usual age commenced his work as a pupil teacher in the same school. He gave early proof of unusual ability as a teacher, and managed his classes with marvellous skill for one so young, showing himself possessed of that indefinable something that is essential in the making of a great teacher.

It may be true that teachers are born, not made, but under any circumstances a careful training in the art of teaching must be an advantage; and though P. T.'s of the present time have many advantages, those of twenty years ago were generally better prepared in the practical work of a school when they entered college. Mr. Barriball took every advantage of his opportunities in this respect, and succeeded in earning the highest commendation from the late Mr. Matthew Arnold, H.M.I., who regarded him as one of the best teachers in his district, and offered him a few years later an Assistant Inspectorship on the elevation of Mr. Thomas Healing to the position of Sub-Inspector.

At the close of his apprenticeship in 1875 he entered the Westminster Training College, being placed third on the General Scholarship list and top of his college. During his two years' training he fully maintained his position, standing at the top of the college list at the end of each year. In 1885 he graduated B.A. at the London University in the First Class.

In 1877 he was appointed head-master of the Hornsey Road Wesleyan School, which position he held for six years. These schools had gained a considerable reputation and were very popular; but owing to the long and continued illness of the head-master they deteriorated considerably. Under Mr. Barriball's energetic rule they soon revived. The school premises were enlarged, the new places were speedily filled, and under his skilful management it became one of the very best schools in the North of London. "I had the pleasure of examining them on several occasions,"

MR. ALFRED D. G. BARRIBALL, B.A.

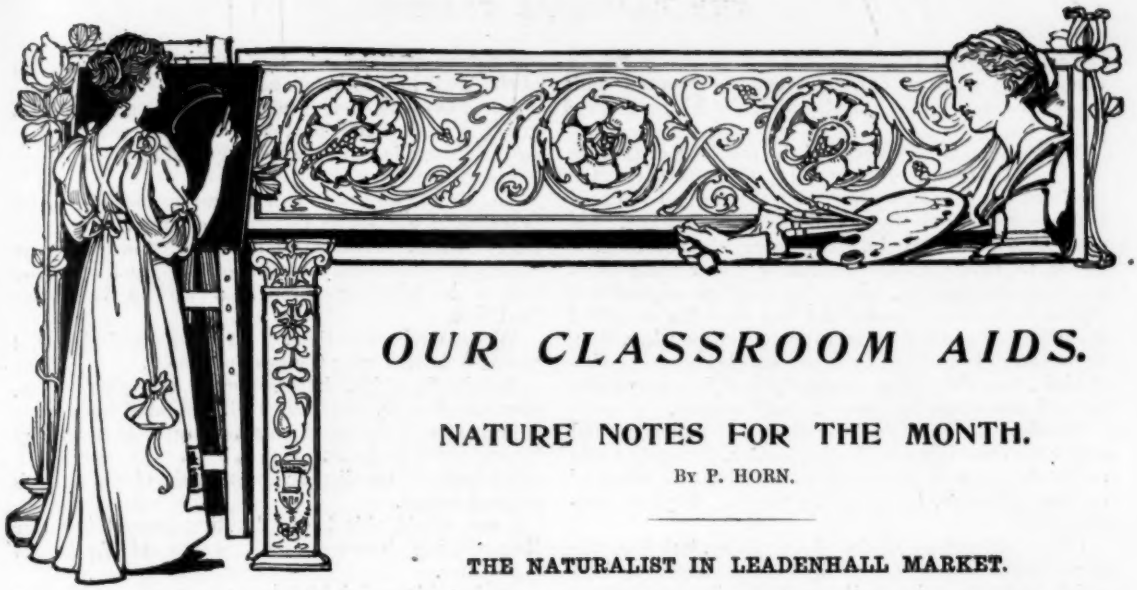
writes an old friend, "and was surprised by the alertness and intelligence of the scholars." Not only in the ordinary school work, but in the training of his pupil teachers his thoroughness was very evident. No pains were spared by him on their behalf, and the two he sent up for the Scholarship Examination passed high in the First Class, one of them occupying the fifth place on the general list and top of his college. The latter afterwards graduated B.A. at the London University.

In the year 1882 the Wesleyan Education Committee lost the valuable services of John L. Kinton, B.A., the lecturer in English, &c., and with their usual discrimination they fixed upon Mr. Barriball as a suitable man to succeed him. This in itself was a great compliment, for Mr. Kinton was a remarkable authority, not in English alone but in other languages. Any man, especially a young man of twenty-seven years, might reasonably have hesitated to accept the position, but Mr. Barriball, with justifiable confidence in his own ability, accepted, and the result has proved the wisdom of that decision.

He entered on his duties in 1883, and in addition to English has been responsible for Classics, French, Political Economy, and Elocution, for a period of twenty-two years. To the excellence of his work during this time the Government Blue Books and H.M.I. reports bear eloquent testimony:—"English Composition and Grammar generally show a mark above the average, sometimes considerable, varying from one to twelve." Mr. Willis reported:—"I may notice that among the training colleges for males the Westminster Training College is rather above the average in the matter of unseen work." In the following year he writes:—"The best average work in the training colleges submitted to me was done in the Westminster Wesleyan." Both these reports are on the French papers of the second year. Mr. Field mentions Westminster as one of the colleges which he would place in the First Division in French, and Mr. Tremenhere wrote:—"Of the ten colleges whose Composition papers I revised, Borough Road and Westminster sent up very creditable essays; thoughtful, solid, well-arranged, and well-expressed compositions." These reports are sufficient to show that Mr. Barriball has done his work well as a tutor of the college, and that he can fairly claim a *share* of the credit due to the staff for the gratifying fact that in 1894 Westminster was placed First of all the Training Colleges of England, and in 1900 stood Second.

In June 1904 Mr. H. A. Reatchlous, M.A., B.Sc., who had been Vice-Principal of the college for a period of sixteen years, unfortunately had to resign his position through failing health, and Mr. Barriball was appointed in September 1904, by the Wesleyan Education Committee, Vice-Principal in his place. This position, which he now holds, brings with it increased responsibility. It will be no easy task to succeed such men as the brilliant and genial Charles Mansford, and the widely read and popular Henry Reatchlous; but those that know the sterling qualities and varied attainments of Mr. Barriball, will have no misgiving as to his ability successfully to perform the new and onerous duties which will now devolve upon him.

Mr. Barriball, like many other teachers, has taken great interest in the religious and educational work of the neighbourhood in which he has resided. For many years he was a manager of the Tooting Graveney group of schools, and chairman of managers for several years. When in the Finsbury district he was an energetic and prominent member of the N.U.T., and was elected President of the Finsbury and City Association. He has held almost every office in the Methodist Church open to a layman, and on his removal from Wandsworth Common the members of his church acknowledged the great value of his services for many years by a suitable and costly present. He is the author of several educational works, the best known being a Juxtalinear translation of *Un Philosophe sous les Toits* (Nelson and Sons), and the *Essentials of French Grammar* (Ralph, Holland and Co.), the latter of which needs only to be read to be appreciated. The writer has known Mr. Barriball intimately from his boyhood all through his successful career, and has learned to value his friendship highly on account of his many virtues and his manly character. He is a sincere and faithful friend conscientious in the discharge of his duties, just and generous in his dealings with all men, even his opponents, and a hater of all cant and humbug. Possessed of a sound judgment, he is generally right in his conclusions, and by the exercise of an indomitable will surmounts any difficulties that may interfere with the work he has to do. That he may be spared long to fulfil the duties of his new position is the earnest desire not only of the writer, but I doubt not of the hundreds of students who have come under his influence during the last twenty years.



OUR CLASSROOM AIDS.

NATURE NOTES FOR THE MONTH.

By P. HORN.

THE NATURALIST IN LEADENHALL MARKET.

IN previous notes I have on several occasions recommended readers to turn their attention to the wares of the poulterer and game-dealer whenever an opportunity is afforded, and more particularly have I alluded to that collection of establishments in the vicinity of Leadenhall Street. Many readers have doubtless visited the place in question, and appreciate its educational value, but for the benefit of those who have not, we will endeavour, by means of a brief chat, to explain the possibilities of the Market, and give some idea of the manner whereby a pleasant and profitable winter afternoon may be spent in the company of the birds.

At the outset, providing the proper season is chosen, intending visitors need not assume that they are about to view an uninteresting collection of denuded table fowls. Poultry is, of course, the staple commodity, and there are sundry butchers' shops (often worth investigating, by the way) in the Central Avenue, but the object of our visit is to find something of interest in the way of game.

The term "game," according to Leadenhall traditions, is applicable to a multitude of birds.

Apparently nothing in the way of feathered creatures is deemed worthless by the agents who send the consignments up to London.

Crows, jays, magpies, hawks, owls (the latter particularly in mid-autumn) and other miscellaneous birds which incidentally share the fate of nobler quarry at the hands of the sporting gentry, are bundled ignominiously into the game hamper and despatched to the market.

In this manner the lordly peregrine falcon has been known to visit town in company with choice Scotch grouse.

From the coast districts, more especially on the other side of the Channel, the assortment of waders contributed is even more bewildering, but of these later.

Leadenhall Market extends its influence in all directions.

It is the great receiving centre, the "vortex," as it has been aptly termed, which draws its supplies from all parts of the United Kingdom. It even provides winter employment for Continental professionals. The Scandinavian trapper sends willow-grouse (or "ryper"), hazel hens, and capercaillie; the practical Dutchman nets the water-birds wholesale on his native marshes with the same object.

Thus, from the foregoing, the prospective visitor can easily gather that this purely commercial centre offers as great possibilities for the study of bird life as the museums.

In some respects the market scores over the museums.

To the naturalist in search of minute details and original notes, the array of recently-killed birds is of infinitely greater value than a collection of dried mounted skins. Apart from the indescribable pleasure which he experiences in handling a strange bird "in the flesh," he here has ample opportunity to note many minor peculiarities, such as the fugitive colour of eyes, legs, and bills, the position and extent of bare patches and excrescences of skin, and the beautiful sequence of the wing coverts; peculiarities which go to make up the birds' individuality, but are so seldom reproduced faithfully save by the most skilful taxidermists.

Museum specimens are usually fixtures, and as such lose an appreciable amount of interest after the first few visits. Here the reverse holds good. Owing to the perishable nature of the goods, the aspect of the various establishments changes from week to week.

The great charm of the market lies in the unexpected.

The constant visitor is continually finding something new; one week perhaps a curious albino variety of common bird, another time a rare migratory wader shot by somebody ignorant of its value, and now hung in a prominent position by the knowing salesman in order to tempt the bird-stuffers, who are ever on the look-out.

Our leading authorities on birds often pay a fleeting visit in search of specimens. A certain ornithologist relates the manner in which he discovered a rare American goose, subsequently found to have been shot in Ireland, hanging in company with ordinary wild-fowl. As a result of this little ramble, we now see the Snow goose figuring in some of the lists of reputed British birds.

Last season, in October, some half-dozen avocets, a rare wader with a curious slender upturned bill, appeared and were quickly sold, fetching a good price.

My own single experience of the purchase of rarities was peculiarly humiliating. In this instance, the specimen was a peewit which had the normal white of the breast replaced by a delicate pinkish tinge. On examining the bargain, preparatory to skinning, I began to have doubts concerning the roseate hues. Further examination, aided by a piece of wadding dipped in benzole, revealed the fact that the beautiful flush was the work of an unknown practical joker, who, to give him his due, had evidently studied the coloration of birds, the pink tinge gradually merging into white beneath the wings in a most natural manner.

Needless to say, the salesman, an old and respected dealer who was innocent in the matter, promptly made restitution, and there and then denuded the fraud of its gay plumage, in order to prevent further complications.

Prizes are not to be found every day, but the constant visitor is certain to find some commoner bird which hitherto, owing to its local distribution, has not been available for close examination.

No course of Nature Study lessons on birds would be considered complete unless one or more of the series were devoted to beaks and claws. The two are of great significance to the scientist when classifying; the humbler devotee who studies solely for personal satisfaction, can derive much pleasure by considering the beak and claws in the light of implements whereby the feathered biped gains its livelihood. As such, the inseparable two are necessarily modified to meet the requirements of the various species.

Here on the benches, and suspended from the stands, are birds of all sorts and conditions—from the shore, the marsh, the woodland, the meadow; waders, swimmers, perchers, and runners.

Let the ambitious novice mark down a few of the distinct types, and by applying the methods popularly credited to Sherlock Holmes, endeavour to deduce the birds' habits and habitats.

The beak and claws are the principal factors, but length and shape of neck and wings, the texture of the plumage, and other characteristics, will materially aid in solving the problem. There is usually a heron in the market hung conveniently where all can see.

Perhaps a kind dealer may be prevailed upon to give a few couples of beaks and claws, which will greatly assist the young teacher in giving the actual lesson.

As already stated, the quaint assortment of wares is derived from all quarters. Here is a splendid opportunity to learn a little concerning the geographical distribution of birds.

The majority of the salesmen know the locality from which the birds were procured, and as a rule are ever willing to supply information to the tactful questioner. Personally, I made my first real acquaintance with several Continental species through the medium of friendly dealers.

Sometimes the tickets will give information.

Students who are following up the controversies on the phenomena of migration, which are appearing in some of the journals devoted to the study of Nature, may find numbers of the birds under discussion in these shops. By reason of the market's far-reaching influence the nature of the wares displayed constitute an index of the great bird movements.

To explain this somewhat vague statement: We go, one November afternoon, and find that nearly every establishment is exhibiting strings of dusky bow-winged Brent geese.

The Brent, we know, is a migratory marine species, breeding in the Arctic regions, and wintering on temperate shores. Their sudden abundance in the market plainly indicates that a branch of the great migratory stream is trickling through a certain locality or localities.

We ascertain the district, jot down particulars, and compare notes during the ensuing weeks.

Woodcock, snipe, knots, plover, migratory ducks, short-eared owls, bitterns, fieldfares, and many other migrants, well known by name, are to be seen here throughout the winter.

Hitherto no mention has been made of the market's summer aspect.

I am afraid this happy hunting ground is rather disappointing between the months of April and September.

During this period, birds are wisely protected by law, consequently the display of genuine wild birds is meagre, being mainly confined to frozen game.

Its maximum degree of interest is coincident with the shooting season; visits made from September to the end of March giving the best results.

In some respects this is unfortunate; we only see the birds when they have assumed their characteristic winter plumage of drab utility.

Their most interesting phases of plumage are withheld from our sight.

The plovers, for instance, and the ducks, are totally different in appearance; we should scarcely recognise them when they are occupied with domestic cares. Here we have the museum at South Kensington to fall back upon.

The most satisfactory method of working the market is to visit it as often as possible. Half-an-hour weekly during the winter, augmented by trips to the museum, will do much to transform the novice into an expert. Never leave the note-book at home, and always be prepared to purchase any specimen which may be deemed suitable.

In selecting a common bird for mounting purposes, first make sure that the skull is unbroken. The avocets mentioned above were wanting in this respect, otherwise they would have commanded a better price. Freshness is essential to good mounting. Taxidermists test by gently tugging at a few feathers on the abdomen. When they readily lose their hold in the skin, the bird, if it be not a rarity, is not worth buying.

A word concerning the salesmen: personally, I have always found them attentive and obliging, nor is their courtesy extended solely to the customer.

Providing he uses the indispensable and necessary tact, the casual questioner is tolerably certain to receive a satisfactory answer.

Some of the salesmen, from constant association with certain birds, have become experts in a way, and are pleased to answer an intelligent question in the intervals when business is slack.

It is curious how the aproned gentleman discriminates between the casual idler and the diffident individual who, in reality, is eagerly hunting for "stuff." Taxidermists are marked men the moment they appear,

and if they are well-known habitues and understand human nature, probably they will receive a welcome invitation to walk inside and make their selection from literal heaps, which is a great privilege.

Next month, with the editorial permission, I hope to give an actual account of an October visit, supplemented by notes taken on the spot.

AUTUMN LESSONS

FOR TEACHERS AND SCHOLARS.

BY S. M. RODGERS,
Norton Street Council School, Birmingham.

IT was regulation half-holiday after the annual inspectorial visits and completion of Form IX. Most teachers will know what that means—the used-up feeling, and the desire to break away from the school precincts and to breathe the sweet air of *Paradise*, or the "place of trees."

The morning did not augur well for our trip, but as the day advanced the fog lifted, and the afternoon turned out an ideal autumn half-day.

The spot we had chosen was as fair a bit of natural woodland as is left near to a large Midland manufacturing city. Only a railway cutting through the very centre of the woodland reminds us of the raids of civilisation. But we can get out of sight of this *convenient bogey*, and we select a spot where not a sound or sight breaks upon us save those which have been familiar to nymphs and naiads, fays and fairies, from time immemorial.

We have said that the day was an ideal day, and as we drank in the full beauty, the cloudless deep blue of the dome above us, the gorgeous autumnal tints of the various trees, the deep reflections on the clear lake, the

WILD BRAMBLE IN FRUIT (BLACKBERRIES) AND FLOWER.
Some of leaves quite red, also red stems.

fragrance of the oaks and pines and the yellow bracken, the poet's words occurred to us with a very distinct meaning:—

> "Oh, what a glory doth this world put on
> For him, who with a fervent heart goes forth
> Under the bright and glorious sky, and looks
> On duties well performed and days well spent!
> For him the wind, ay, and the yellow leaves
> Shall have a voice and give him eloquent teaching."

Well, here we were; we had striven to perform our duties as teachers, now we had come to sit at the feet of the great teacher, Nature. Lesson after lesson is crowded upon us; perhaps the weightiest of all is, the great power of beauty on life and character. This subject is too large for the present paper, but surely some such thought must have been present to the mind of Browning when he wrote:—

> "O world, as God has made it, all is beauty,
> And knowing this is love, and love is duty."

A second lesson is, our own ignorance; for with all our science who can explain the wonders of the mani-

HIPS: FRUIT OF WILD ROSE.
Colour: sealing-wax red, very bright and opaque, black tips.

fold tints displayed in the fading foliage before us? Why is it that some leaves turn a russet brown, some a deep crimson, others a rich gold, others a pale yellow, some streaked yellow and brown, and others keep a deep green as they get ready to fall from the boughs? We notice that, innumerable as the tints are, they are nearly all gradations from pale yellow to deep crimson or orange, different shades, that is, of sunlight. In art the halo of glory is of the same hue, and maybe that is why we speak of the *glory* of autumn colouring. When we have had our fill of admiration for the general effect of the scene, we begin to notice the details, and here again mystery, and wonder, and skill, as well as beneficence of design and forethought strike us.

What mean these fine gossamer threads that float in the air about us? They seem unattached to any object. Are they the cobwebs that we wished to be swept away from our brains? or are there aerial spiders which have power to fling their meshes unimaginable distances? Or is the silk spun by some spiders so fine that a slight breeze will separate it from its mooring and send it adrift in mid-air? If the latter is the correct theory, another question naturally follows—Of what use is the web, and wherefore the weaving? We must think this out later on.

The wild fruits of bush and tree engage our attention next. And now comes the practical result of our excursion; for, "though on pleasure we were bent, we

had a frugal mind"—that is to say, we were about to gather a collection of berries, nuts, and leaves to illustrate lessons on autumn. We intend to follow something like this plan in giving our lessons:—

1*st*. We will lead children to think out the primary function of fruit—reproduction—and lead them to see in this a wise economy of nature, "fruit after its kind."

HAWS: FRUIT OF HAWTHORN.
Colour: rich crimson, opaque, black tips.

2*nd*. Much fruit good for food. Wild fruits specially provided for birds and animals that dwell in woods.

3*rd*. Poisonous berries to be shunned; these to be shown so that children may be familiar with them and avoid them.

4*th*. Special specimens to be examined by children,

ELDER, WITH RICH DARK PURPLE BERRIES.

and to form subjects for complete object-lessons. These are, according to our collection—

(*a*) The *blackberry*, with a bramble spray. Teacher to point out an attractive feature in this plant; that pretty white or shell-like pink flowers are often seen on the bush at the same time that red or black ripe berries are on the branches and the leaves are changing to a russet red.

(*b*) Bright scarlet *hips* (opaque as red sealing-wax), the fruit of the wild rose.

(*c*) Bunches of dark crimson *haws*, the fruit of the *haw*thorn; much of the same shape as hips, but considerably smaller; error of calling haws hips should be shown.

(*d*) *Elder-berries*, dark purple but not opaque, small and oval or round; many growing in one bunch, fruit following after a round flat bunch of small white flowers; remark that a month back elder-bushes were covered with berries, now the stalks only of the berries are left; favourite berries with our common birds; make a wholesome wine.

(*e*) *Berries of guelder rose.*—The flower of the wild guelder rose much like elder-flower, but not so many

WILD GUELDER ROSE.
Fruit luscious transparent ruby-red.

in a bunch because the flower is larger; berries larger, bright, transparent red; not good for us to take, only good for birds.

(*f*) *Wild bryony*, the berries of which are very gay and beautiful but extremely injurious; bright red, luscious-looking, growing in thick clusters all round the stem. *Note.*—Warn children to avoid all wild berries, and particularly red ones; many are deadly poisonous.

(*g*) *Acorns.*—These are too well known to need description, but as this year the oak is specially prolific, and as the acorns are exceptionally fine, we have gathered sufficient for each child in two large classes to have one, and what is of great interest to the children, to have it in its pretty pipe-like cup with the stem.

We shall also encourage those who can, to make an oak collection. The leaves, buds, flowers, fruit, galls, insects, bark, acorns, and a bit of wood can all be supplied by children, and these fastened to a card would be a picture which would always be interesting to those who had contributed some specimens.

Yes, we will have a couple of lessons on the oak-tree and its products. I doubt whether we shall exhaust the interesting subject then. Boys, I dare-

say, when they hear of the tannin of the bark being used in preparing leather, will think of an expression but too familiar to some amongst the less favoured,

WILD BRYONY.

Leaves turning purple, berries brilliant red, most attractive-looking, but injurious.

when they were threatened with a "good tanning," or a "good hiding," which terms are either derived from the leather strap used, we regret to say, in punishment, or from the punishment being applied to the skin, vulgarly called "the hide."

5th. One point that must be specially emphasised in lessons on fruits is the *care with which the germ is protected;* however various the mode, it is always perfectly

ACORNS.

Colour: bright green, yellow and brown, cups rugged and greenish brown.

safeguarded. It is the all-wise Provider of all things who,

> "In its case,
> Russet and rude, folds up the tender germ
> Uninjured, with inimitable art;
> And ere one flowery season fades and dies
> Designs the blooming wonders of the next."

The last two lines prove the accuracy with which Cowper observed the trees, and this may be shown to the children from a branch of any of our common trees of the wood, the new leaf-buds for the next spring being formed and folded carefully up for their winter sleep as the old leaves fall off.

All too soon the changing aspect reminds us that our half-day in the country is drawing to a close. The sun appears as a huge ball of red fire, the whole of the western horizon has caught the rose-flame tint, the lake, even the damp sedges on the margin are painted with burnished gold, and grey-blue mists enwrap the hills and woods, imparting that appearance of mystery and infinity which Ruskin considers one of the greatest charms in English scenery. The *finale* is so grand that it makes us silent with an inward reverence which is worship.

NOTES OF LESSONS ON THE NOVEMBER SKY.

Class.—The upper standards in either rural or urban schools, for although the former have a much wider expanse of sky exposed to their view, much of the glory of the heavens can be seen from the streets of a town.

Time.—Two set lessons of thirty minutes each with a short chat every morning.

Object.—The thoughtful observer finds much to occupy his attention during the summer in watching the animals and plants around him, but when winter comes it is necessary to find something to occupy the long dark evenings, and the following lessons are intended to meet this want. They should also tend to develop the reasoning powers of the scholars, for there is perhaps no science in which deductive reasoning plays a more important part than it does in astronomy.

Step I. Preparation.—The teacher should first arouse the enthusiasm of the children for the subject by awakening their wonder and interest. The readiest way to do this is by giving them the opportunity of using an astronomical telescope, but as very few observations can be made during school hours, and children cannot be trusted to handle a delicate telescope without supervision, this method involves considerable self-sacrifice on the part of the teacher; this difficulty may, however, be overcome by letting the children construct their own telescopes, which is a much more simple operation than most people imagine. A set of lenses can be obtained for five shillings, which, when mounted in a cardboard tube, make a good 2-inch telescope. But the children can make a useful glass for themselves without even this outlay, by utilising the glasses of disused or broken spectacles; when these are neatly fixed in a cardboard tube, if clear and of good focal length, they will show the mountains of the moon, Jupiter's satellites, and many other beautiful

and interesting objects, which cannot fail to arouse the interest of the scholars. A warning should be given that on no account must even a small glass like this

Ancient Star map, showing Constellations

be used for viewing the sun unless adequate means are taken to protect the eye.

Step II. Presentation.

The Heavenly Bodies.—If we choose the first cloudless day in November after the sun has gone down in the crimson west, we shall see the sky studded with stars, among which rides the silvery moon. What can we learn of these bodies?

Naming the Stars. This at first seems a hopeless task, and so it would be were not some system adopted. The early observers simplified matters by grouping the stars together and calling them after some object to which they appeared to bear some slight resemblance. Although this resemblance is often exceedingly difficult to trace, the method is a good one, as it reduces what is merely a confused mass of stars to order, enabling us to identify them, first as groups, then as individual stars.

The Constellations.—A few of the principal constellations should be learned, and their position in the heavens noted. The easiest constellation to find, and one that forms a good starting-point for the study of the heavens, is the Great Bear, or St. Charles' Wain; these seven stars may be found any evening in November about eight o'clock almost due north. The two stars forming the back of the wain or waggon are called the Pointers, as the line joining them points directly at the Pole Star; this cannot be mistaken, as it is the only bright star in that part of the sky, and forms one of a small constellation, the Little Bear. If we continue the line from the Great Bear to the Pole Star for about an equal distance on the other side, we come to a group of five stars forming roughly the letter W; this is Cassiopeia. Continuing the line we come to four bright stars forming a rough square, the Great Square of Pegasus; and a curved line through the side of the square nearest the Pole Star will lead through the girdle of Andromeda to three bright stars in a row forming part of the constellation of Perseus. Close by is seen Capella, one of the brightest stars in the heavens, and a straight line from the Pole Star through Capella brings the observer to Orion, the most brilliant constellation in the northern sky, containing, as it does, two stars of the first magnitude and five of the second, three of the latter forming the conspicuous Belt of Orion. Space will not permit the list to be extended, but if these constellations are used as landmarks others can easily be found by means of a star map.

Number of the Stars.—Having grouped the stars together, it is possible to count them, about 3400 being visible in England. The telescope, however, shows that there are an infinite number of stars too faint to be seen, for every improvement in the tele-

Step III. Association.

Observation of the heavenly bodies has always had a fascination for mankind; the natural superstition of man led him to endeavour to trace some connection between the phenomena he witnessed and terrestrial events. This is seen in the story of the Wise Men, and constant reference is made to this idea in literature.

> "When beggars die there are no comets seen,
> The heavens themselves blaze forth the death of kings."

The same idea is bound up in the derivation of the words disaster and catastrophe, and in the common phrase—"To thank one's lucky stars."

The children should have access to a good star map, so that they may extend their knowledge by identifying new constellations and fixing their position in relation to those they have already learned.

The importance of the Pole Star to navigators should be pointed out, as it marks true north.

Many of the constellations are named after the heroes of mythology. Andromeda was the daughter of Cassiopeia; she was chained to a rock as a punishment, but was rescued by Perseus, who slew the monster that guarded her. Pegasus was the winged horse of Bellerophon. Orion was a mighty hunter.

Note that the stars are not all of equal brilliancy; some, like Sirius and Capella, being remarkably bright, and others barely visible. The small cluster known

scope and the camera brings fresh stars to view, the number being at present nearly 100 millions.

The Apparent Motion of the Heavens.—Fix a rod, with a cross-piece at right angles in the centre, in such a position as to bring the point at which the two rods cross between the eye of the observer and the Pole Star; now note which constellations are seen in each of the four quadrants. If this observation is repeated several times during the evening, it will be seen that all the stars are apparently rotating round the Pole Star in a *contrary clockwise direction*.

The Moon.—The moon is full November 12th. Even to the naked eye the surface of the moon shows dark patches erroneously called Seas, but a small telescope will show that these are really plains, the brighter parts being due to the sunshine falling on the mountains. The best time for viewing the moon is at the first or third quarter, as the shadows are longest then, showing up the configuration of the surface to the best advantage. The craters or wall plains with their central cones, the broad dark "seas," the curious "rays" and "rills," all combine to make the study of the moon intensely interesting.

It is soon seen that these features never vary, showing that the moon always presents the same face to the earth.

The Planets. — Ancient observers soon discovered that, while nearly all the stars preserved the same relative position, there were a few bright stars which were exceptions to this rule, and which were therefore called Planets or Wanderers. Some of these may be seen this month. Jupiter will rise early in the evening in the N.E. between Aldebaran and the Pleiades. This is easily recognised by its size and brilliancy, and a small glass will establish the identity by showing the four moons. These are interesting bodies to watch, one or more of them being eclipsed almost every evening; sometimes the shadow of one of them can be seen crossing the face of as the Pleiades will illustrate this point; to the naked eye 10 stars are visible, a small glass will show between 30 and 40, while no less than 625 have been counted with a powerful telescope.

This movement may also be shown by means of a camera. If a plate is exposed in the camera for several hours the stars will appear, not as dots, but as parts of circles.

The legend of the "man in the moon" is of course a myth, life being non-existent on the moon owing to the absence of air and water. One proof that the moon has no atmosphere, is the entire absence of any refraction of the light of a star as the moon passes in front of it. It is, of course, only very bright stars that can be seen shining in close proximity to the moon, but a good opportunity of witnessing this interesting phenomenon will occur on the 13th, when Aldebaran will disappear behind the moon at 6.35 and reappear at 7.16.

Before Harrison invented the chronometer the eclipses of Jupiter's satellites played an important part in navigation, as Jupiter just as the shadow of our own Moon crossed the earth during the recent eclipse. they served to show Greenwich time.

Saturn, which is in Aquarius this month, is perhaps the most beautiful of all the heavenly bodies, but it requires a fairly good glass to show the rings at all clearly.

Mars may be found low down in the S.W., but Mercury, which will be at its greatest elongation November 27th, is a morning star and only visible just before sunrise.

Shooting - Stars. — Although there is hardly a clear night on which one or more of these mysterious bodies may not be seen to flash across the sky, the month of November sees them in greatest numbers. The earth then plunges into a swarm of tiny bodies that are travelling along like a shoal of herrings; these bodies are cold and dark, but if they come near enough to our earth to pass through the atmosphere, the friction will generate sufficient heat to make the body incandescent.

The 13th and 14th are the evenings on which the best star-shower should occur, but as the moon will then be nearly full, the conditions for seeing it will not be favourable.

As a rule the heat generated is sufficient to consume these bodies before they reach the earth, but occasionally they are large enough for a portion to do so; these are called Meteorites. The Natural History Museum at South Kensington has a magnificent collection of meteorites which are well worth a visit.

Although there is a shower every year, it is only once in thirty-three years that the earth enters the thickest part of this shoal; then there is a magnificent display.

Step IV. Formulation.—1. The stars are arranged in groups called Constellations.

2. Only a small fraction of the stars is visible to the naked eye.

3. The stars appear to revolve round the Pole Star in the opposite direction to the hands of a clock.

4. The moon has no air or water; its surface is marked with mountains (mostly volcanoes), plains, etc.

5. The planets alter their positions relatively to the other stars: Jupiter will be between Aldebaran and the Pleiades, Saturn in Aquarius, Mars low down in S.W.

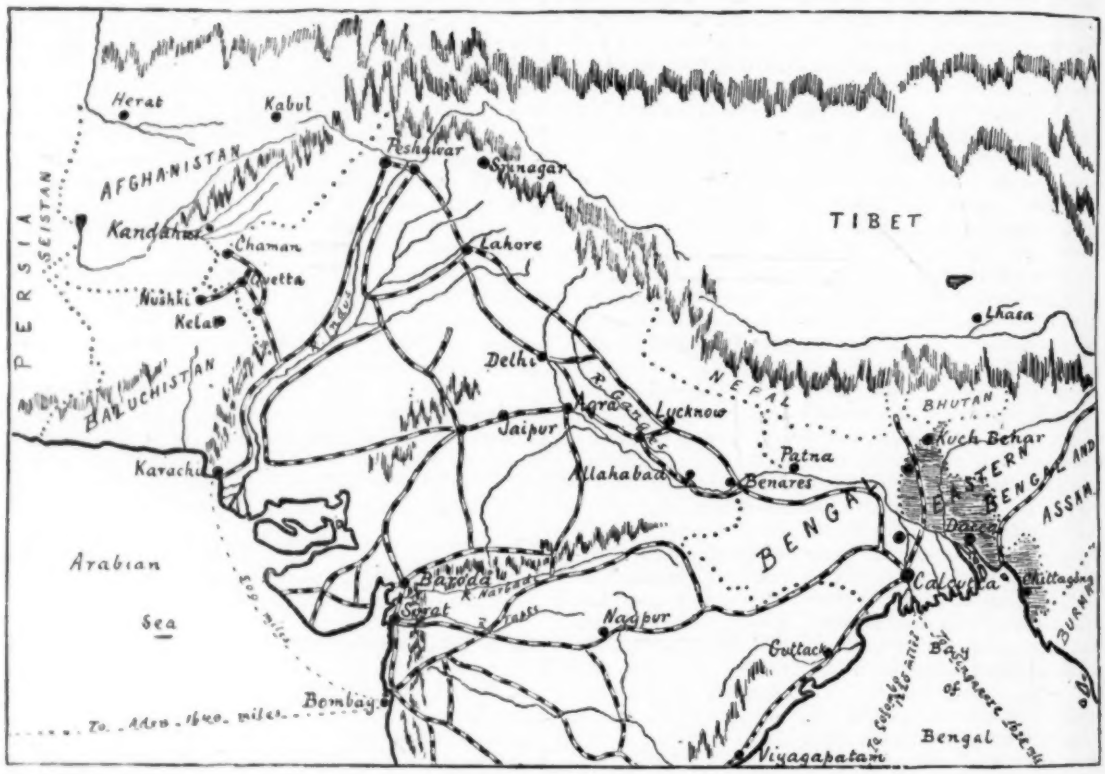
6. Shooting-stars are dark bodies that are rendered incandescent by friction with our atmosphere.

Step V. Application.—The outcome of these lessons should be a growing interest in the subject of astronomy. In a few lessons like this it is only possible to touch on a few points, and this only in a cursory manner, but enough has been done to excite the curiosity of the children, thus leading them to make further observations and keep systematic records. In the whole book of Nature there is no page which teaches a finer lesson than the heavens, which, we are told, "declare the glory of God and the firmament showeth His handiwork."

OUR ILLUSTRATED GEOGRAPHICAL NOTE-BOOK.

INDIA—PAST AND PRESENT.

INDIA, the richest jewel in the British crown, the land of romance and mystery, of glittering splendour and squalid misery, the region of a thousand tongues and a million gods! The country was ever looked upon with covetous eyes by alien nations, who during the ages overran it time after time. In 1579 Thomas Stephens, the first Englishman to set foot in India, found the



Mogul dynasty in full sway. Akbar occupied the throne of Delhi, and controlled the northern portion of the country, as well as a great deal of the Peninsula. He was succeeded by his son Jehangir, who raised the Mogul fortunes to their zenith, and it was to this "Mightie Emperour, commonly known as the Great Mogul," that Sir Thomas Roe came from James I. in 1615 to establish a "factory" at Surat, and to procure such rarities as China and Japan afforded.

The East India Company.—Incorporated on the last day of December 1600, this company is inseparably connected with the rise and progress of British rule in India. The Dutch had been markedly successful in their trading ventures in the East, and they strenuously opposed "the Governor and Company of the merchants of Soudan trading to the East Indies." At the mouth of the Tapti, however, a British victory over the Dutch secured the right to trade in Peninsular India. Progress was slow, and by the end of the seventeenth century we had obtained footing only at what is now Madras, Bombay, and Calcutta. The ground upon which Madras now stands was acquired from the ruler of the Carnatic in 1639. Bombay was ceded to Charles II. of England by the Portuguese in 1661, as part of Catherine of Braganza's dowry. Seven years later Charles passed it over to the Company for an annual payment of £10. In 1689 Fort-William was erected at Chuttanatee, in honour of the new king at home.

As the Company's factories and fortified stations increased in number, it necessitated the employment of an increasing force of soldiers to protect its trade. The interests of the Company were bound up in commercial projects, but to maintain their rights they frequently had recourse to the sword against Europeans and natives, and did not hesitate to war against the Mogul himself.

The early period of our settlement was marked by a constant struggle against the Portuguese and the Dutch. But the years 1750–57 witnessed a still more serious rivalry with the French. At one time it seemed as though the British would be completely ousted by the operations of Dupleix. At this critical moment arose Robert Clive. From the time when by sheer daring he captured Arcot, until with but 3000 men he overthrew Surajah Dowlah at Plassey with 50,000, his progress was marked by a succession of brilliant victories. By 1760 France was worsted in the struggle, and the supremacy of England was re-asserted. During the next forty years the French made desperate efforts to recover the lost ground, but, thanks largely to the policy and victories of Lord

Wellesley, not only were French aims negatived, but the Mogul power was completely broken.

With the commencement of the nineteenth century was begun the great work of gradually welding the various states into something like union, until another dark period occurred. The year 1857 witnessed the Indian Mutiny, one of the saddest and blackest chapters in the annals of our nation. The native troops or Sepoys revolted. The outbreak was unexpected, and the white population unprepared, and in various cities were witnessed the most horrible scenes recorded in history. The Mutiny was at length quelled, and since that time India has enjoyed peace, during which she has made marked progress.

Productions.—It is a difficult matter to briefly describe the productions of a country with an area of 1½ million square miles, covering 30 degrees of latitude. A great deal of the country lies within the torrid zone, and the remainder within the warmest part of the north temperate. There are three seasons—*cool* (October to March), *hot* (March to June), *rainy* (June to October). The seasons are regulated by monsoons, winds blowing steadily in one direction for months at a time. The change of monsoon is usually a period of heavy rainfall. The heat is greater on the east coast than on the west.

Only about one-third of the country is cultivated or grazed, for there are large areas of desert and sterile uplands. *Cotton*, *sugar*, and *tobacco* are important, but the quality is not nearly so good as those of America; on the other hand the *jute*, *indigo*, and *opium* are unequalled elsewhere. The great food products are *rice*, *millet*, *wheat*, *tea*, *coffee*, *spices*, etc. Rice forms the food of millions of the people, but millet supports the greater number.

Considering the size of the country, minerals are by no means abundant; *coal* and *salt* are almost the only ones worked to any great extent. *Diamonds* and *gold* are found in scattered districts, and the *rubies*, *tin*, and *petroleum* of Burma are a source of wealth.

The chief trees are the teak, sal, bamboo, and various kinds of palm. The Government conserve quite 100,000 square miles of forests, where the timber-cutting is carefully regulated.

Industries and Commerce.—Quite 191 millions of the people live by agriculture. The following was the acreage of the principal crops in 1903: Rice, 71; wheat, 19; other food-grains, 92; sugar-cane, 2; cotton, 11; and oil-seeds 13 million acres. Tea occupied 500,000 acres, indigo 653,000, and tobacco 935,000 acres.

In British territory the cultivation of the poppy is permitted only in parts of the province of Bengal, the united provinces of Agra and Oudh, together with a few thousand acres in the Punjab, for local consumption. In the monopoly districts the cultivator obtains from the Government an advance to enable him to prepare the land, and he is bound to sell the crop to Government agents, who despatch the product to Government factories at Patna and Ghazipur to be prepared for market. Chests of manufactured opium are sold by auction at Calcutta monthly. China is the chief customer for the narcotic. The opium monopoly is the second largest source of revenue to the Government in India, and salt the third.

The manufactures of India are not extensive, although in the weaving of shawls and carpets and the working of the finer metals the skill and delicacy displayed are remarkable, considering the primitive tools employed. During recent years *cotton-spinning* has made great progress; in 1904 there were 201 cotton mills at work, with over half a million spindles. With a plentiful supply of home-grown cotton and cheap labour, India is very well situated to cater for the European markets, and already textiles are figuring among the exports. There are also jute, paper, and woollen mills at work.

Coal-mining is of increasing importance. In 1900 there were 286 collieries at work; in 1904 the number increased to over 300, with an output of 7½ million tons.

The *commerce* of India is extensive, and it increases by leaps and bounds.

	Imports.	Exports.
1900 . .	£57,509,000	£66,013,000
1903 . .	88,471,000	113,325,000

	1900.	1903.
Imports into U.K. from India .	£27,388,000	£32,304,000
Exports to India from U.K. .	30,115,000	34,477,000

In 1903 the United Kingdom took from India:

Raw cotton	£1,576,000
Wheat	3,653,000
Jute	3,201,000
Tea	5,355,000
Rice	1,707,000

In 1903 India took from the United Kingdom:

Cotton goods	£17,629,000
Cotton yarn	1,187,000
Ironwork	3,730,000
Machinery	2,743,000

People.—The inhabitants of India number over 294 millions. They cannot be considered as one nation, for they are really many peoples widely separated in blood, physique, temperament, and religion. Nearly three-fourths of them are Hindus, and the Mohammedans number over 60,000,000. The Buddhists are found chiefly in Burma, and the Parsis in Bombay. The Christians number less than 3 millions. The British-born population does not exceed 97,000, and it says much for British methods that so small a force can peaceably control so vast a number of Orientals, whose antipathy to the West is usually little disguised. Though immense strides have been made in education, only 14½ million males and less than 1 million females are able to read and write. Of the boys of school age less than 23 per cent. attend school; of the girls less than 3 per cent. There are 797 newspapers published in twenty-four languages or dialects, but the state of education precludes any large circulation. The *Bombay Samachar* is the largest daily, with a circulation of only 4000, and the *Hitavadi* of Calcutta, a weekly, with 16,000.

One of the greatest civilising influences in India has been the railway, which has done much to break down the intolerable system of caste.

A marked feature of the native character is their intense loyalty, not to the British Empire but to the British monarch personally, for, like all Easterns, they possess an abiding veneration for the majesty of royalty. It was the existence of this feeling that prompted Queen Victoria to take the title of Empress of India, and that necessitated the pomp of the Durbar of 1903 to mark the accession of King Edward VII. Nowhere in

the British Empire did the death of Queen Victoria cause grief more spontaneous than among the teeming millions of India. The forthcoming tour of the Prince and Princess of Wales is eagerly awaited, and gigantic preparations for welcome are in progress. Less than twenty years after the Mutiny, King Edward (then Prince of Wales) made a triumphal progress through Hindostan; the approaching royal visit may do even more to strengthen the loyalty and devotion of our dusky fellow-subjects.

The visit, too, comes at a most opportune time. The country is in a state of mild unrest, caused by the disagreement between Lord Curzon and the military administration. The weakest feature in our rule in India is its impersonal character, and the Viceroy is the visible representative of the Emperor. Perhaps there has never been a Viceroy animated by such lofty imperial sentiments as Lord Curzon, and his resignation has undoubtedly impaired the impressive character of the high office. But the five months' continuous journeying within the boundaries of the Indian Empire by the Prince and Princess of Wales will bring to the native mind a renewed and fuller realisation of the gracious monarch, whom the royal son and daughter will represent.

Communications.—The great rivers Ganges, Bramaputra, Indus, Irawadi, and their branches are important arteries of inland traffic. Fifty years of railway construction have provided 26,956 miles of iron roads, of which 20,000 miles are owned by the state. Additional lines are always in building, but it is rather to railways leading out of India that attention is now directed.

In the east the terminus is Chittagong. A new railway of 300 miles would take us to Mandalay, from which there is already a line to Kunlong, on the border of China. The possibilities of trade between India and China which the railway would provide need no elaboration.

In the west and north-west the trade of the country has to rely upon caravans. A railway to Kabul is always under discussion, and appears to be somewhat nearer realisation than ever before.

The North-Western Railway enters Baluchistan near Jhatpat, and then passes to Sibu, from which there is a branch to Quetta and another to Chaman. The line from Quetta to Mushki is now nearing completion. There is every possibility of this railway being carried on to the Seistan region of Persia. This would greatly stimulate the Hindu-Persian trade.

From Chaman to Kandahar and Herat is only 585 miles, and with this railed it would be possible to travel from London to Bombay or Calcutta (*viâ* the Central Asia Russian railways) with only the 21 miles of English Channel to give rise to fear of sea-sickness.

Partition of Bengal.—The province of Bengal has an area of 189,000 square miles and a population of 78 millions. Such an administrative area would appear to be in need of sub-division. The shaded portion of our sketch map shows the area that it is proposed to take from Bengal to add to Assam. There is much native opposition to the change, for the people object to lose Calcutta as their provincial capital. It must be admitted that in size and wealth and splendour, Dacca, the capital of the new province of Eastern Bengal and Assam, cannot compare with Calcutta, the second city in the British Empire. But the partition will make for better administration, and will give the eastern province additional opportunities for progress.

THE INSPECTOR'S NOTEBOOK.

BY AN INSPECTOR OF SCHOOLS.

Economic Improvements in Organisation.

IN spite of much pessimism on the part of passive resisters and others the 1902 Act is quietly, surely, and splendidly revolutionising education. The teacher being the local expert, is often able unobtrusively to render valuable aid in the metamorphosis which is taking place. As a result of the great financial pressure we must expect considerable changes to be effected on economic grounds. Many villages have two small schools where one might suffice. In such cases, if the County Council can satisfy the religious demands, it will be possible to reorganise so as to obtain the best conditions, *e.g.* two small schools—one a boys', the other a girls' and infants'—would best be organised perhaps as a mixed school for older scholars and one for infants. In some cases it will be found advisable to place Standard I. with the infants.

In other villages you sometimes have two small mixed schools each with an infant class. When a convenient opportunity occurs, such as the resignation of a master, it may be possible to organise these as one school for older scholars above Standard I., and the other for infants and Standard I. By this means the schools can be provided with better staffs, and education will benefit, whilst the cost per head will be less.

Improvements in Buildings.

The managers of non-provided schools are meeting the requirements of the local authority architects in a commendable manner. Stuffy, badly-lighted, and unclean schools are being wonderfully transformed. Now is the time for the teachers who are actually working in the schools to quietly offer their suggestions to those who are inspecting the premises.

It often happens that the schoolmaster is able to point out defects which escape the notice of a stranger.

An inexpensive form of ventilating is to cut out a piece of the lowest pane of the windows, and to insert a V-shaped piece of glass with sides. In most high-roofed schools an automatic apex ventilator is necessary.

Many schools are much improved by the fixing of a wooden dado and wainscot. This should be varnished, and will give quite a cheerful aspect to a dreary-looking room.

Then there is the colouring of the walls. This should be done frequently. In some schools with a wood surround whitewashed walls look well, but as a rule light green or buff are found to be the most artistic and useful tints. Always avoid dark chocolate colour or pink.

Equipment.

Improvements are gradually being made in the equipment of schools. The old desks are being replaced by new ones. The managers and teachers should take great care to obtain the most suitable desks, more especially as such will have to last for years. In infant schools short desks to hold four, with flat tops and with backs to the seats, are often found better than longer desks holding seven or eight. Where feasible, a classroom or two should be fitted with long tables and small

chairs, as used in American Kindergartens, resembling miniature smoking chairs.

For the older scholars short desks should be used for preference to allow of freedom of movement. As children of all ages from seven to fourteen have to be provided for, the desks should not all be fitted with seats of a uniform height.

Lighting.

Many of the older schools are, comparatively speaking, dark through having small windows or perhaps small diamond-shaped panes. Much can be done to improve the lighting in these cases. Infant schools especially need to be well lighted. Often it is not expensive to enlarge a small window. In other cases a skylight will provide what is required, and modern large panes of glass can be substituted for the ecclesiastical pattern.

The New Ideas re Infants.

It seems to be taken for granted that infants between the ages of three and five as a rule derive but little lasting intellectual benefit commensurate with the extra years spent under instruction. Where there is a large class of these babies it is most advisable that they should be taught in a separate room suitably equipped. They hinder the progress of the older infants if taught in a common room, and they are often, owing to the exigencies of the case, subjected to a harder discipline than such young children should have to submit to.

Infant teaching has for some years been developing on free lines, and the latest suggestions will be found most helpful to all teachers who are opposed to mechanical and formal methods. A few of the leading thoughts expressed are worth repeating:—

1. The leading principle which determines the methods of education suitable to early childhood is the recognition of the spontaneous activity of children.

2. "Kindergarten Occupations" are not merely pleasant pastimes for children.

3. Formal teaching is undesirable for children under five.

4. The older children in some infants' schools have been periodically examined. This practice should be entirely abandoned.

5. Lessons given to infants may often be associated with each other through some leading idea or ideas.

6. Children should always be encouraged to say without interruption and in their own words what they know, what they want to know, and what they think about any object being dealt with.

7. Children of five to seven years should not be kept at the same fixed occupation for more than fifteen minutes.

8. Difficult lessons like reading and number should never be taken in the afternoon.

9. Though no formal geographical teaching is expected for children under seven, yet in various ways the ground may be broken for future instruction.

10. It is not compulsory that girls under six years of age should be taught to sew.

11. In the drawing course anything like small work should be avoided as being trying to the visual organs, and almost impossible for the undeveloped muscles and nerves of young children.

12. The age at which a child should cease to be taught as an infant depends upon the child's proficiency and upon many local circumstances.

NOTE-BOOK QUERY COLUMN.

Letters should be addressed—INSPECTOR, c/o THE EDITOR, 35 Paternoster Row. *Very urgent letters can only be replied to by post when two stamps and an addressed envelope are enclosed.*

X.Y.Z. asks how the examinees at the K.S. Part I. will know whether they may proceed to Part II.

Answer—The results for Part I. will probably be published early in 1906.

T.D. has applied for admission to two training colleges, and asks my opinion on the ethics of thus, as it were, covering his retreat.

Answer—I see no great objection to your conduct; but if there be such doubt about the religious knowledge result, why not apply only for a place in the college not making this an essential.

REGULATIONS FOR SECONDARY SCHOOLS.

GEOGRAPHY—(*continued from page* 179).

Preliminary Instruction.

TWO stages of previous instruction should be recognised on the basis of the outline laid down above under Instructions to Inspectors—say from the eighth to the tenth year, and from the tenth to the twelfth year.

1. (*a*) Home, *i.e.*, simple local geography to make children familiar with (i.) land forms, and (ii.) the action of climatic forces on these forms.

(*b*) The general relief of the globe, *i.e.*, the great slopes of the world as forming the continental water-partings and deciding the general distribution of rainfall.

2. (*c*) The continents in order, beginning with the simplest (South America), as sections of the globe relief, showing specially the disposition of highlands and lowlands, the chief river valleys, the names and positions of the great countries, and of a few of the chief towns in each.

(*d*) The British Isles.

Suggested Four-Year Course.

FIRST YEAR (12–13 YEARS), EUROPE.

Term 1. (*a*) The great water-partings of the world. (*b*) The British Isles (revision), comparison and contrast with Europe in general.

Term 2. Europe in general. (*a*) Coast, with special reference to good harbours and sea routes. (*b*) Surface, with special reference to mountains, rivers, and land routes. (*c*) Climatic considerations, especially as affecting characteristic products.

Term 3. Europe in detail.

SECOND YEAR (13–14 YEARS), AMERICA AND AFRICA.

Term 1. The great oceans of the world, showing briefly their relation to the great water-partings; winds, tides, and currents; finding position at sea.

Term 2. The Americas in general (*i.e.* coast, surface, climate, characteristic products) and in detail.

Term 3. Africa in general (*i.e.* coast, surface, climate, characteristic products) and in detail.

THIRD YEAR (14–15 YEARS), ASIA AND AUSTRALASIA.

Term 1. (*a*) Revision and general. (*b*) General distribution of flora and fauna, with special reference to environment basis; climatic zones.

Term 2. Asia and Australasia in general (*i.e.* coast, surface, climate, characteristic products).

Term 3. Asia and Australasia in detail.

FOURTH YEAR (15–16 YEARS), REGIONAL CONTRASTS AS ILLUSTRATED BY BRITISH EMPIRE OR BY ANY OTHER AREAS.

Term 1. (*a*) General distribution of minerals and their accompanying or dependent industries. (*b*) Man and his markets, with special reference to British Empire.

Term 2. British Isles, especially from view of commercial geography.

Term 3. Concluding considerations, *e.g.* distribution of human race; formation and expansion of nationalities; political geography; relations of history and geography.

NOTES.

(1) The order of sequence in dealing with the subject-matter need not necessarily follow that of the suggested course; many teachers may prefer to transpose the work assigned above to the second and third years.

(2) In the latter years of the course scholars should be instructed in the interpretation and use of maps such as those of the Ordnance Survey, and become familiar with the use of contour lines and the reading of heights, distances, &c.

(3) Special lessons may be introduced in the course; *e.g.* in first year—The climatic phenomena of Europe as leading up to general principles; in second year—Distribution of products illustrated by American examples; in third year—Effects of environment; in fourth year—Geography as applied to practical questions of the day.

Though the scope and arrangement of the new course may not commend themselves to all, it must be conceded that there is exhibited a desire to treat the subject more rationally than in the past. There is no intention to adhere rigidly to the suggested treatment, and teachers will be able to give effect to their own leanings towards any particular aspect of the subject with which their own inclinations and studies have made them more familiar.

The study of geography is deserving of a far more important place in the curriculum of Elementary and Secondary Schools than usually obtains. It is too often left to the mercy of bald and stereotyped text-books, compilations of facts and figures little more interesting than a Parliamentary Blue-Book.

Geography is often defined as a description of the earth rather than the earth as the dwelling-place of man. The great land masses, the illimitable waters, the massive elevations, the vast plains, the mighty rivers, the living things upon the surface of the earth and the products that lie underneath, the vegetable world, are all more or less interesting in themselves; but in their relations to the life and habits, the desires, necessities, and comfort of man, the interest is intensified a thousandfold.

Excepting history and the individual experiences of man himself, there is no subject that touches human life at so many vital points as geography. On every hand are opened up wide fields for profitable inquiry; but the very vastness of the domain, with ramifications encroaching upon many branches of natural science, causes some little trouble in the selection of matter to best fill in our picture of the earth as the dwelling-place of mankind.

It is axiomatic that the study of any subject should commence at the beginning, yet in the teaching of geography a start is often made in the middle, if not altogether at the wrong end. A mere child is at once plunged into a labyrinth of geographical definitions, illustrated by reference to physical features whose multiplicity and infinite variety in size and aspect preclude any clear conception of their meaning.

As a mental training the study of geography is second to none in importance. The faculty of observation is called upon at every turn. A walk in town or country is invested with a new charm, for familiar objects and aspects of nature take on new phases in the light of the information our study affords. From our fuller conception of the local area we are the better able to classify and co-ordinate facts concerning the various aspects of the country in which we live, and from thence pass to the world at large, to the consideration of which we are enabled to bring quickened reasoning powers and an intelligent realisation of realms upon which our eyes may never rest.

In the earlier stages at least, text-books are not necessary; and if they are used, the facts and illustrations supplied should always, so far as possible, be amplified by examples within the scholar's personal experience of local conditions.

To give full effect to the possibilities of the subject the teacher must not be content to rely upon the matter contained within the covers of one book. He must glean for himself from every available source the facts and figures and illustrations to vivify his subject, and give it that life and interest to which geography so lends itself.

We propose month by month to outline the work of each term in the Four-Year Course. It is, within the space available, impossible to treat the syllabus in minute detail, but the salient points will be enumerated, to which the teacher may add as circumstances necessitate.

FIRST YEAR.—TERM I.

(*A.*) THE GREAT WATER-PARTINGS OF THE WORLD.

1. **The Irregular Distribution of Land and Water.**—(*a*) *Comparison of Hemispheres.* — Northern, three times as much land as the Southern; Eastern, twice as much as the Western.

In Northern Hemisphere more than half the surface

is water; in the Southern the water exceeds the land more than six times.

(*b*) *Comparison by Zones.*—In the Torrid the land is but one-third the area of the water; in North Temperate they are almost equal; in the South Temperate the water exceeds the land eleven times.

2. **Contour of the Land.**—Where land and sea come in contact. This line of contact is practically uniformly level except where local conditions cause variation. Great elevations bordering the sea attract the adjacent belt of water, *e.g.* Bay of Bengal, 300 feet higher than at Colombo. On the Atlantic side of Central America sea level appreciably lower than on the Pacific.

(*a*) *Striking Similarities*—

1. Old and New Worlds widen towards the north; taper to points turned towards the south; *cf.* the great peninsulas of the globe.

2. On either side of the Atlantic the northern shores are very irregular; the southern shores in America and Africa but slightly indented.

3. Southern coast of Europe, with its three great peninsulas, has its match in Southern Asia.

4. South America's regular coast-line has its counterpart in the unbroken map of Africa or Australia.

(*b*) *Contrasts*—

1. New World extends from north to south; Old World from east to west.

2. Northern coasts of land in both Eastern and Western Hemispheres marked by long lines almost encircling the Arctic Ocean; southern coasts terminate in great members projecting from the general mass.

3. Of the continents, Africa, the simplest in form, practically limbless. Asia's limbs but little more than one-fourth of its mass. Europe the octopus of the continents. North America more broken than South, but difference not so marked as between Europe and Africa.

Broken coast-line marks the accessibility of the land, well marked by square miles of area per mile of coast. Europe 1 mile of coast to 190 square miles; Asia 1 to 500; Africa 1 to 750; the Americas and Australia average 1 to 380.

Other similarities and contrasts are well worth careful search as affording valuable aids to the position, structure, and configuration of the land masses.

3. **Relief of the Land,** *i.e.* the varying elevation and depression of the surface. Relief brought about by the silent force of slow upheaval; in the case of volcanic action the result more sudden and visible. Earth's crust always changing; portions rise while others sink. Contour worn by the sea, and the relief by erosion, the constant disintegration by weather, rivers, &c. Simply stated, the chief forms of relief resolve into plains, plateaux, and mountains.

4. **Great Ridge Water-Parting of the World.**—View the world from above the North Pole. Elevated land in the shape of a horseshoe stretches from the extreme south of South America by means of the Andes and Rocky Mountains to Alaska. Recommencing from Bering Strait, the Asiatic portion curves round by way of the Slanavoi and Kinghan Mountains to the Himalayas, continuing in a less marked degree to the Bosphorus. From the Red Sea the elevated line continues along the eastern coast of Africa to the Cape of Good Hope. Within the horseshoe the slopes to the sea are long; outside it the slopes are short and mainly abrupt. The great slopes are in the direction of the Atlantic and Arctic Oceans.

5. **Regional Water-Partings.**—(*a*) Examine watersheds of each continent in detail. Course of the principal rivers. Utility rather than length the measure of importance. An immense river may traverse inhospitable regions and be of little economic value; a short river may fertilise a tract of land, the abode of millions of people.

(*b*) Commercial value of rivers—navigability, harbour mouths, access to distant regions. Note irrigation, with reference to Nile barrage.

(*c*) The long slope of water-partings favourable situations for towns. Confluence of rivers a suitable site. In olden times the river was the road and highway, and only means of access to the outside world.

(*B.*) The British Isles.

The revision of the ordinary physical and political facts will afford opportunity for elaboration, especially from the commercial aspect.

Comparison and Contrast with Europe.

Position.—1. Situated almost in the middle of the land hemisphere; lies in the direct route between the busiest and most civilised peoples of the Old World and the busiest and most progressive of the New. Convenient and commanding position for commerce.

2. Easy trading routes to all parts of the world. Trace them, and discuss possible new routes on completion of Panama Canal.

3. Insular position assures safety from sudden attack. Security a vast aid to commercial progress.

Cf. Of continental countries France best situated for commerce, with its Atlantic and Mediterranean seaboards. Vast areas in Russia and Austria remote from sea. Ill-defined natural boundaries give rise to insecurity, hence conscription, large standing armies, etc.

Coasts.—No part of country more than 120 miles from sea; 1 mile of shore to every 20 square miles. A wealth of natural harbours and useful estuaries.

Surface.—Except in few scattered districts, as Wales and the Highlands of Scotland, the surface presents few obstacles to easy communication with all parts of the country by road, rail, and canal.

Cf. The difficulties caused to transport by the Alpine system to the communications of France, Southern Germany, Switzerland, Austria, and Italy.

Climate.—Equable temperature allows outdoor labour all the year round. Mild winters compared with corresponding latitudes. Surrounding seas never ice-bound.

Cf. The heat of Southern Europe a bar to labour at midday. The extreme cold in winter in Northern Europe and the more remote interior of Russia. The frozen Baltic and the Sea of Azof.

Industries.—Vast supplies of coal and iron the foundation of Britain's manufacturing supremacy. Our great manufactures metals, textiles, shipbuilding, etc. Note cotton industry—one county of a small country monopolising the world's trade in a product grown thousands of miles away.

Cf. The similarity of manufactures in France, Germany, and Belgium. The restriction to dairy produce in Denmark, and to forest and sea products in Scandinavia. The wine and silk trade of the southern countries, etc.

Internal Communications. — Roads, railways, and

SECOND YEAR (13–14 YEARS), AMERICA AND AFRICA.

Term 1. The great oceans of the world, showing briefly their relation to the great water-partings; winds, tides, and currents; finding position at sea.

Term 2. The Americas in general (*i.e.* coast, surface, climate, characteristic products) and in detail.

Term 3. Africa in general (*i.e.* coast, surface, climate, characteristic products) and in detail.

THIRD YEAR (14–15 YEARS), ASIA AND AUSTRALASIA.

Term 1. (*a*) Revision and general. (*b*) General distribution of flora and fauna, with special reference to environment basis; climatic zones.

Term 2. Asia and Australasia in general (*i.e.* coast, surface, climate, characteristic products).

Term 3. Asia and Australasia in detail.

FOURTH YEAR (15–16 YEARS), REGIONAL CONTRASTS AS ILLUSTRATED BY BRITISH EMPIRE OR BY ANY OTHER AREAS.

Term 1. (*a*) General distribution of minerals and their accompanying or dependent industries. (*b*) Man and his markets, with special reference to British Empire.

Term 2. British Isles, especially from view of commercial geography.

Term 3. Concluding considerations, *e.g.* distribution of human race; formation and expansion of nationalities; political geography; relations of history and geography.

NOTES.

(1) The order of sequence in dealing with the subject-matter need not necessarily follow that of the suggested course; many teachers may prefer to transpose the work assigned above to the second and third years.

(2) In the latter years of the course scholars should be instructed in the interpretation and use of maps such as those of the Ordnance Survey, and become familiar with the use of contour lines and the reading of heights, distances, &c.

(3) Special lessons may be introduced in the course; *e.g.* in first year—The climatic phenomena of Europe as leading up to general principles; in second year—Distribution of products illustrated by American examples; in third year—Effects of environment; in fourth year—Geography as applied to practical questions of the day.

Though the scope and arrangement of the new course may not commend themselves to all, it must be conceded that there is exhibited a desire to treat the subject more rationally than in the past. There is no intention to adhere rigidly to the suggested treatment, and teachers will be able to give effect to their own leanings towards any particular aspect of the subject with which their own inclinations and studies have made them more familiar.

The study of geography is deserving of a far more important place in the curriculum of Elementary and Secondary Schools than usually obtains. It is too often left to the mercy of bald and stereotyped text-books, compilations of facts and figures little more interesting than a Parliamentary Blue-Book.

Geography is often defined as a description of the earth rather than the earth as the dwelling-place of man. The great land masses, the illimitable waters, the massive elevations, the vast plains, the mighty rivers, the living things upon the surface of the earth and the products that lie underneath, the vegetable world, are all more or less interesting in themselves; but in their relations to the life and habits, the desires, necessities, and comfort of man, the interest is intensified a thousandfold.

Excepting history and the individual experiences of man himself, there is no subject that touches human life at so many vital points as geography. On every hand are opened up wide fields for profitable inquiry; but the very vastness of the domain, with ramifications encroaching upon many branches of natural science, causes some little trouble in the selection of matter to best fill in our picture of the earth as the dwelling-place of mankind.

It is axiomatic that the study of any subject should commence at the beginning, yet in the teaching of geography a start is often made in the middle, if not altogether at the wrong end. A mere child is at once plunged into a labyrinth of geographical definitions, illustrated by reference to physical features whose multiplicity and infinite variety in size and aspect preclude any clear conception of their meaning.

As a mental training the study of geography is second to none in importance. The faculty of observation is called upon at every turn. A walk in town or country is invested with a new charm, for familiar objects and aspects of nature take on new phases in the light of the information our study affords. From our fuller conception of the local area we are the better able to classify and co-ordinate facts concerning the various aspects of the country in which we live, and from thence pass to the world at large, to the consideration of which we are enabled to bring quickened reasoning powers and an intelligent realisation of realms upon which our eyes may never rest.

In the earlier stages at least, text-books are not necessary; and if they are used, the facts and illustrations supplied should always, so far as possible, be amplified by examples within the scholar's personal experience of local conditions.

To give full effect to the possibilities of the subject the teacher must not be content to rely upon the matter contained within the covers of one book. He must glean for himself from every available source the facts and figures and illustrations to vivify his subject, and give it that life and interest to which geography so lends itself.

We propose month by month to outline the work of each term in the Four-Year Course. It is, within the space available, impossible to treat the syllabus in minute detail, but the salient points will be enumerated, to which the teacher may add as circumstances necessitate.

FIRST YEAR.—TERM I.

(*A.*) THE GREAT WATER-PARTINGS OF THE WORLD.

1. **The Irregular Distribution of Land and Water.**—(*a*) *Comparison of Hemispheres.* — Northern, three times as much land as the Southern; Eastern, twice as much as the Western.

In Northern Hemisphere more than half the surface

is water; in the Southern the water exceeds the land more than six times.

(*b*) *Comparison by Zones.*—In the Torrid the land is but one-third the area of the water; in North Temperate they are almost equal; in the South Temperate the water exceeds the land eleven times.

2. **Contour of the Land.**—Where land and sea come in contact. This line of contact is practically uniformly level except where local conditions cause variation. Great elevations bordering the sea attract the adjacent belt of water, *e.g.* Bay of Bengal, 300 feet higher than at Colombo. On the Atlantic side of Central America sea level appreciably lower than on the Pacific.

(*a*) *Striking Similarities*—

1. Old and New Worlds widen towards the north; taper to points turned towards the south; *cf.* the great peninsulas of the globe.

2. On either side of the Atlantic the northern shores are very irregular; the southern shores in America and Africa but slightly indented.

3. Southern coast of Europe, with its three great peninsulas, has its match in Southern Asia.

4. South America's regular coast-line has its counterpart in the unbroken map of Africa or Australia.

(*b*) *Contrasts*—

1. New World extends from north to south; Old World from east to west.

2. Northern coasts of land in both Eastern and Western Hemispheres marked by long lines almost encircling the Arctic Ocean; southern coasts terminate in great members projecting from the general mass.

3. Of the continents, Africa, the simplest in form, practically limbless. Asia's limbs but little more than one-fourth of its mass. Europe the octopus of the continents. North America more broken than South, but difference not so marked as between Europe and Africa.

Broken coast-line marks the accessibility of the land, well marked by square miles of area per mile of coast. Europe 1 mile of coast to 190 square miles; Asia 1 to 500; Africa 1 to 750; the Americas and Australia average 1 to 380.

Other similarities and contrasts are well worth careful search as affording valuable aids to the position, structure, and configuration of the land masses.

3. **Relief of the Land,** *i.e.* the varying elevation and depression of the surface. Relief brought about by the silent force of slow upheaval; in the case of volcanic action the result more sudden and visible. Earth's crust always changing; portions rise while others sink. Contour worn by the sea, and the relief by erosion, the constant disintegration by weather, rivers, &c. Simply stated, the chief forms of relief resolve into plains, plateaux, and mountains.

4. **Great Ridge Water-Parting of the World.**—View the world from above the North Pole. Elevated land in the shape of a horseshoe stretches from the extreme south of South America by means of the Andes and Rocky Mountains to Alaska. Recommencing from Bering Strait, the Asiatic portion curves round by way of the Stanavoi and Kinghan Mountains to the Himalayas, continuing in a less marked degree to the Bosphorus. From the Red Sea the elevated line continues along the eastern coast of Africa to the Cape of Good Hope. Within the horseshoe the slopes to the sea are long; outside it the slopes are short and mainly abrupt. The great slopes are in the direction of the Atlantic and Arctic Oceans.

5. **Regional Water-Partings.**—(*a*) Examine watersheds of each continent in detail. Course of the principal rivers. Utility rather than length the measure of importance. An immense river may traverse inhospitable regions and be of little economic value; a short river may fertilise a tract of land, the abode of millions of people.

(*b*) Commercial value of rivers—navigability, harbour mouths, access to distant regions. Note irrigation, with reference to Nile barrage.

(*c*) The long slope of water-partings favourable situations for towns. Confluence of rivers a suitable site. In olden times the river was the road and highway, and only means of access to the outside world.

(*B.*) The British Isles.

The revision of the ordinary physical and political facts will afford opportunity for elaboration, especially from the commercial aspect.

Comparison and Contrast with Europe.

Position.—1. Situated almost in the middle of the land hemisphere; lies in the direct route between the busiest and most civilised peoples of the Old World and the busiest and most progressive of the New. Convenient and commanding position for commerce.

2. Easy trading routes to all parts of the world. Trace them, and discuss possible new routes on completion of Panama Canal.

3. Insular position assures safety from sudden attack. Security a vast aid to commercial progress.

Cf. Of continental countries France best situated for commerce, with its Atlantic and Mediterranean seaboards. Vast areas in Russia and Austria remote from sea. Ill-defined natural boundaries give rise to insecurity, hence conscription, large standing armies, etc.

Coasts.—No part of country more than 120 miles from sea; 1 mile of shore to every 20 square miles. A wealth of natural harbours and useful estuaries.

Surface.—Except in few scattered districts, as Wales and the Highlands of Scotland, the surface presents few obstacles to easy communication with all parts of the country by road, rail, and canal.

Cf. The difficulties caused to transport by the Alpine system to the communications of France, Southern Germany, Switzerland, Austria, and Italy.

Climate.—Equable temperature allows outdoor labour all the year round. Mild winters compared with corresponding latitudes. Surrounding seas never ice-bound.

Cf. The heat of Southern Europe a bar to labour at midday. The extreme cold in winter in Northern Europe and the more remote interior of Russia. The frozen Baltic and the Sea of Azof.

Industries.—Vast supplies of coal and iron the foundation of Britain's manufacturing supremacy. Our great manufactures metals, textiles, shipbuilding, etc. Note cotton industry—one county of a small country monopolising the world's trade in a product grown thousands of miles away.

Cf. The similarity of manufactures in France, Germany, and Belgium. The restriction to dairy produce in Denmark, and to forest and sea products in Scandinavia. The wine and silk trade of the southern countries, etc.

Internal Communications. — Roads, railways, and

canals the most perfectly developed in the world. British railways foremost in safety.

Cf. Most European railways are State-owned, with cheaper fares and greater encouragement to commerce.

Commerce.—Our immense trade. The race for markets. Britain the world's carrier.

Cf. Competition of France and Germany with Britain in the world's markets. Germany possesses larger and faster ships for Atlantic traffic, but only possible by Government subsidies, whereas British ships must pay their own way.

People and Government.—The Constitution secures peaceable progress of the country. Civil strife unknown.

Cf. The frequent changes in Government in Republican France. The internal upheavals in Russia. The general unrest caused by revolutionary societies. The Anarchists and Nihilists.

The foregoing points are by no means exhaustive, and are but suggestions for elaboration by the teacher. In dealing with any feature of our own country there is almost endless scope for profitable discussion in comparing and contrasting what obtains under similar or dissimilar conditions among neighbouring peoples.

ENCOURAGEMENT OF EVENING SCHOOLS.

THE Board of Education, South Kensington, has issued a Memorandum to the Inspectors of Technical Institutions, Evening Schools, and Schools of Art, dealing with the various ways in which employers may assist the work of Evening Schools, and it makes the following recommendations:—

1. Fees and Prizes.—Perhaps the simplest and most common method of co-operation is that in which the employer or employing firm pays the Technical Institute or Evening School fees of those employés who take classes or courses approved by the employer as suited to the circumstances of the special industry concerned. A report as to the attendance and progress of students thus assisted is generally required, and without this condition the assistance is likely to be ineffective. In some cases the necessary books are also supplied, partly or entirely at the employer's expense.

Prizes are not infrequently given by employers to students who pass with success the examinations of the Board of Education, of the City and Guilds of London Institute, of the Society of Arts, or of other recognised examining bodies. Such prizes generally take the form of a money gift. In one of the best-thought-out schemes of this kind the prize increased in value with each year of the student's Evening School Course, reaching a maximum of £5 for the best fourth-year student.

Prizes given by employers are sometimes restricted to their own employés, but more frequently given to the Institution and open to competition among all students in attendance.

2. Increase in Wages.—In certain cases students who have passed successfully through a course of study approved by the employer become thereby entitled to a rise of wages which would not otherwise be granted. In several instances the usual annual increase in the rate of wages of an apprentice, or an advantage of 6d. or 1s. a week additional wages, is made partly dependent either upon regularity of attendance at approved evening classes, or on passing certain approved examinations. As apprentices' wages are frequently arranged on a graduated scale, this practically amounts to placing a second or third year apprentice on the wage level of one in his third or fourth year.

Again, the recognition of increased efficiency may be marked by preference in selection for posts carying greater remuneration or greater chances of promotion. Thus engineering firms not infrequently offer encouragement to students who show marked excellence in their technical studies, by transferring them from one section of the workshop to another, or to the drawing-office, so that they may enjoy opportunities of obtaining wider trade experience.

3. Time allowed for Attendance at Classes.—More varied in form and more subject to local and trade conditions are the concessions in the matter of working hours which some firms find it in their power to make. This is a form of encouragement which, perhaps, would not at first sight have suggested itself as very probable, and a note of some of the methods of affording it which have in practice been found compatible with economy of production in trade workshops is therefore likely to be no less valuable than interesting.

There are already numerous examples of students attending approved evening classes being allowed, without loss of pay, some reduction on the ordinary hours of work.

Allied to this is the plan adopted by some large engineering firms by which the attendance of students at courses or classes held during the ordinary working hours is looked upon as a definite portion of their employment, counting as wage-earning or apprenticeship time. This plan, which has been widely adopted, allows the student to attend such classes for a time varying from a minimum of about two hours per week to as much as six months in a year. It is perhaps needless to remark that as the time allowed by the employer increases, the care exercised in the selection of the students who are to profit by the concession increases likewise.

Another form of remission of time which is occasionally granted, takes the shape of "writing off" part of the apprenticeship course—thus possibly reducing the apprenticeship of a good student by a year.

Many large engineering firms employing a number of apprentices make arrangements for their attendance one day per week, or two half-days per week, or two or three hours one afternoon or early morning per week, at an approved course of instruction at a Technical School. Arrangements of this kind are found to work admirably, but in practice the best results are obtained when the total time thus allowed per week approximates to one working day. In many towns Associations of Master Builders, Master Painters, and Master Plumbers give similar privileges.

4. Higher Instruction.—In a few cases employers, or a federation of employers, have selected a few specially qualified students and have arranged that these shall receive scholarships, or maintenance and fees, while attending a two or three years' full time course specially arranged to bear on their industry. Very carefully thought-out schemes for promoting the higher technical education of selected employés have been worked out in special cases.

5. Supervision.—Another valuable form of co-operation is found in the work of the committees of employers, formed in certain districts, to keep the curriculum of the Technical Institute under observation and to exercise on it a beneficial influence by the suggestions and guidance which those actually engaged in an industry can so well give. Where any such committee exists, it is found to be of advantage that a certain number of persons should be members both of the employers' committee and of the Technical Institute or Education Committee of the locality. Such an arrangement facilitates, too, another form of co-operation; for where the employers are satisfied of the value of the instruction given at the Technical School, and maintain some personal touch with the work done there, they will often give a preference to the students in dealing with applications for admission to their works and offices. Indeed it may be said generally that the success of any plan of co-operation depends very largely on the personal interest shown by the employer, director, manager, or foreman of the works in question not only in the employés under his charge, but in the local Technical School at which the instruction is given. Without this personal interest the class teaching may become too academic or too general in character, and may not be directed with sufficient reference to the particular industry concerned.

WE have been asked by the Agent-General for Tasmania to draw the attention of our readers to the fact that lantern slides illustrating Tasmania and its resources can again be loaned from this department during the coming winter months. The slides are made up in complete sets of about fifty each, and with each set a pamphlet will be sent to assist the lecturer in describing the country to his audience. The only cost to the borrower will be the carriage on returning the slides, about one shilling.

The Practical Infant-School Teacher.

ACTION SONG FOR BABIES.

Words and Melody by SISSIE TURLEY BUTLER. *Arranged for the Piano by* LILLIE TURLEY DANDO.

1. I have ten tiny fingers,
I have ten tiny toes,
I have two eyes, I have two ears,
I have one little nose.

2. I have a mouth to open,
And tiny teeth to bite,
A little tongue lives in my mouth—
I keep it out of sight.

3. My hands are clean and ready
To clap—one, two, three, four;
My feet are waiting for the word
To tap, tap, on the floor.

Our Modern Language Section

FRENCH PRIZE COMPETITION.

RULES.

1. All translations should be **posted not later than November 8th, 1905**, and addressed:—PRIZE EDITOR, Office of the *Practical Teacher*, 35 and 36 Paternoster Row, London, E.C.
2. Competitors should cut out and send the Coupon which appears on the Back Wrapper page of the current number.
3. Competitors should write pseudonym only on MS. Prize-winner will be asked to send name and address for publication.
4. No competitor may take the prize offered more than once in three months.

A Prize of Half a Guinea is offered for the best rendering into English of the following extract:—

Le bonheur transforme les hommes. La figure de Jules, ordinairement grave, brillait maintenant d'une jubilation extraordinaire. La béatitude débordait de ses yeux, comme elle débordait de son cœur. Il fallait le voir, marchant avec toute la dignité qu' exigeait un pareil état d'âme! En examinant cette tête où le bonheur était emmagasiné à haute pression, comme la vapeur dans une chaudière de locomotive, on lui eût trouvé ce rayonnement doré dont les peintres sacrés ont l'usage d'encercler la tête de leurs saints et de leurs saintes. Ah! comme sa mère avait raison de dire en riant qu'elle lui voyait une auréole! Jules avait beau mettre son chapeau par dessus, quand il sortait, cette diablesse d'auréole, par esprit de contradiction sans doute, trouvait encore le moyen de s'épanouir autour de son chapeau. En attendant le jour tant désiré du mariage, l'heureux mortel faisait part de la grande nouvelle à tout le monde. Employé au Ministère des affaires inutiles—le plus important, vous le savez, de tous nos ministères—il était, comme de juste, excessivement occupé. Aussi, ne pouvant aller faire la cour réglementaire à sa fiancée pendant la journée, il y allait le soir. De plus, il dînait chez elle deux fois par semaine. Quand, au moment de prendre congé, sa future belle-mère lui disait: "Allons, monsieur, embrassez votre fiancée, je vous le permets," il était l'homme le plus heureux de Paris, et n'eût certes pas permuté avec le Président de la République.

JOSEPH TURQUAND.

RESULT OF THE OCTOBER COMPETITION.

The prize is awarded to "Ardgay." Will "Ardgay" kindly forward name and address for publication?

First Class.—Conor, Josiah, Caen, Blanc-bec, Aschenbrödel, C. E. M., Caudebec, Shakspere, Zodiac, Les fleurs, Kettering, Peter Rabbit, M. E. T., Historicus, Scot, Joli-cœur, Nib, Bruyère, Radiobe, Lemuel Gulliver, Summerbank, Through, Aldwych, E. S. L. A., K. T. G., C. A. T., Katerfelto, Carpe diem, Rusticus, Rodez, Tyro (A), Tyro (B), The Choctaw, Dunciant, Minnehaha, Old Sexeian, Gesed, Nosnibor, Yorkist, J. E. F., D. S. G., Kirsteen, Perseus.

Second Class.—Mai, Evelyn, Lac, Rosalind, Punch, Bluette, Saxonne, Laurel, Lucretius, W. K. P., M. A. F.

The winner of the prize offered in the August number is Mr. P. G. Asbury, Pupil Teachers' School, Bury St. Edmunds.

Report.

There is a large proportion of really good translations. *Affaires* refers of course to politics, that is, public affairs. In the translation of *s'aimaient peu*, the context shows that *s* is to be taken in its reciprocal meaning. Several translated *lui chantent* as "sing to her." Here again common sense should come to the aid of the translator, as it should have prevented a competitor, part of whose translation was very spirited, from writing "Robespierre rounds off his life both by suicide and by the guillotine."

In reply to a correspondent, we beg to state that competitors may still have their papers corrected on sending with them six penny stamps and a stamped directed envelope for return.

We have received during the month translations of the August extract from Natal and from West Australia. These unfortunately came too late to be corrected. It will be remembered we once had a competition for Colonial subscribers. This commenced very well, but unfortunately the numbers were not kept up.

Prize Translation.

Between Girondin and Jacobin there was a difference, not fortuitous but essential, an innate difference in kind, an instinctive hate like that of wolf and dog. Madame Roland with her strength and sparkle was to Robespierre a special object of fear. To both belonged that which seems as if it should tend to bring men together, but which on the contrary creates the keenest antipathy, namely, *the same failing*. The heroic woman, the marvellously pertinacious man, had a fault, or rather a foible, in common. Both wrote incessantly; *they were born authors*. Style to them, one cannot fail to perceive, was no less important than the State. Night and day, living or dying, they wrote, at the most critical junctures, almost with the axe poised above their heads; the pen was their ruling passion. True children of the most literary of all centuries, the eighteenth, they were faithful to that character in the tragedies of a different age. Madame Roland goes on quietly writing her admirable portraits, adding here and there a delicate touch, while the rabble under her windows are shouting for her blood. Robespierre on the eve of the ninth of Thermidor, with death by the assassin's knife or the scaffold facing him, goes on rounding his periods, less careful of his life, it would seem, than of his literary repute. There was henceforward no love lost between them either as politicians or as writers. Robespierre, indeed, had too exact an understanding, too just a sense of the equable life needed by a great worker, to let him form a willing intimacy with that queen among women. In her circle, what would the life of a friend have been? Either submission or storm.

ARDGAY.

Circular 615.

FRENCH AND GERMAN ASSISTANTS FOR ENGLISH SECONDARY SCHOOLS.

BOARD OF EDUCATION,
WHITEHALL, LONDON, S.W.
September 1905.

THE French and Prussian Governments have recently established a system under which a number of young masters in English Secondary Schools may be attached for a year to certain Secondary Schools in their respective countries. The authorities of the foreign Ministries of Public Instruction are most anxious to extend the scheme, and to find similar opportunities in suitable English Secondary Schools for young graduates who will afterwards be employed in their State Schools.

These Governments have approached the Board of Education with a view to obtaining their assistance. In the opinion of the Board the proposal has much to recommend it, and, provided that proper care be exercised in the selection of the candidates and in the arrangements made for their work, it is thought that the presence of such teachers on the staff of a school might add materially to the effectiveness of the Modern Language teaching.

In the majority of cases it will probably be found that the candidates have too little pedagogical experience to be entrusted under such unfamiliar conditions with the continuous instruction of a class of boys, and so to take a share in the ordinary work of the school. Modern Language instruction, to be effective, is now seen to demand a greater degree of continuity in teaching than was at one time thought necessary. Nevertheless there are many ways in which such a young foreign teacher may give valuable assistance. If he possesses the necessary tact he will be readily consulted by his English colleagues who are responsible for the regular instruction; for them he will be a ready work of reference and a court of appeal on points of disputed usage. His main usefulness will, however, lie in the direction of immediate contact with the boys in order to develop their powers of conversation. In the ordinary class work the conversational aim must always be strictly subordinate to the instructional; and the limits of the time-table will hardly ever more than suffice for the methodical acquisition and effective command of that organised knowledge of the language which it is the aim of the instruction to secure. For this side of the work there would be little advantage to be derived from the substitution of a young foreigner for the experienced English teacher, nor would the foreign Government consider the conditions satisfactory where a definite share in this instruction was assigned to the assistant. Such an arrangement would not only impose on him a very considerable amount of preparation, and curtail too largely his own opportunities for study, but it would also divert his energies from their proper sphere—viz., the development of the conversational powers of the boys.

To this end he should be employed to conduct small "conversation groups" of five or six pupils, and it will generally be found desirable to limit these groups to boys over fourteen. Attendance at these exercises should be quite voluntary, and regarded as a privilege, and in some measure as a reward for good progress in the ordinary class work. In these groups the work should be made as little formal as possible. It should be constantly borne in mind that it is not intended to convey to the pupils fresh knowledge, nor even, primarily, to practise them in that which they have already acquired. The chief object is to induce the boys to talk rapidly on subjects within their grasp in a manner which is not possible in the classroom. The assistant will guide the conversation, but not control it too rigidly by means of a regular succession of questions and answers; nor will he be constantly insisting on full sentences. Rapidity is to be the key-note of such exercises, and their aim an effective use of conversational forms.

Not more than two hours' work a day is to be demanded of such assistants. The rest of their time should be at their own disposal. They may be encouraged to take part in the games and sports of the schools, if they show any readiness or aptitude in this direction; but such participation should not be expected of them. With regard to their own reading, they should feel at liberty constantly to consult the headmaster or any member of the staff who may be recommended to them for this purpose; and care should be taken to point out to them all educational facilities (lectures at Universities and University Colleges, University Extension courses) which are likely to prove useful.

Though these assistants are not members of the staff, their services will necessitate some remuneration. In boarding-schools it would probably be sufficient if arrangements could be made whereby they should be boarded and lodged in one of the boarding-houses. In schools where such an arrangement is not possible, either from the fact that they are day schools or for some other reason, it would be necessary to offer such salary (say from £60 to £75) as would cover the cost of board and lodging.

It is clearly understood that headmasters would have the same power of dismissal over these assistants as over the rest of their staff, though it is hoped that they would not exercise it with these teachers—whose appointment is only for a year, at any rate during the initial stages of this experiment—except in cases of grave breach of the rules or comity of the school, and that they would be prepared in such cases to make a report upon the matter to the Board for transmission to the foreign Ministry.

It will be of great assistance to the ultimate success and spread of a movement, which it is believed may be of great value for the teaching of Modern Languages in France, Germany, and England, if headmasters who are willing to make this experiment in a sympathetic spirit would submit a frank report at the close of the year upon the results that have been obtained, of the difficulties that have occurred, and the conditions that should be fulfilled in their opinion if the best use is to be made of these assistants. These reports would of course be treated as strictly confidential by the Board of Education and the foreign Ministry of Public Instruction concerned.

Headmasters who are willing to co-operate and to employ such assistants are requested to communicate with the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Westminster, S.W.

W. N. BRUCE.

1*st June* 1905.*

* Revised on 1st August 1905 after conclusion of agreement with Prussia.

The Dover-Ostend Mail Route.—Many of our readers followed the advice given in the Holiday Number, and travelled to the Continent by the Belgian State Railway and Mail Packet Service. They will consequently feel a special interest in this line, and will be pleased to hear that in the determination to keep fully abreast with the latest improvements in means of locomotion, a new turbine mail steamer has been put on this service. At the trial trip on the Clyde this new boat, the *Princesse Elisabeth*, attained an average speed of 24 knots on four consecutive trips, totalling 55 miles, and has thus beaten the record of all packet boats afloat.

The employment of turbines instead of cylinders reduces the throbbing and vibration to a minimum or does away with it altogether, and the vessel has such steadiness at sea that unless one looks out at the port-holes, or sees the surrounding objects moving by, it is impossible to tell whether the ship is moving forward or not.

The vessel is under such perfect control that when steaming ahead at a speed of 20 knots, she has been brought to a dead stop in one minute twenty-five seconds in a distance estimated at 2½ lengths.

The gross tonnage is 1747 tons, and the ship will easily accommodate 1000 passengers, besides a crew of seventy officers and men. The vessel is fitted up in a most luxurious style, ventilation and heating being provided for on the most approved plans.

Electrical installations form a very noteworthy part of the equipment of the vessel. There are electric bells and lights all over the boat, the captain communicates with the engine-room by telephone, the cranes and ventilating fans are worked by electro-motors, and the masts are fitted with the Marconi apparatus for wireless telegraphy.

OUR TUTORIAL SECTION

OUR PUPIL TEACHERS' AND SCHOLARSHIP COURSE.

BY ARTHUR T. FLUX,

Late Principal of the Belvedere Pupil Teacher Centre, First on Scholarship List; Author of "Scholarship School Management," "Building of the British Empire," etc.

SCHOLARSHIP COURSE FOR 1905 AND 1906.

Eleventh Month—November.

BEFORE dealing with the next month's work, I wish to direct the attention of all students to the "Special Reports on the Papers worked by Candidates at the King's Scholarship Examination, 1904," which has just been issued by the Board of Education. This is an excellent idea, and is another instance of the peaceful revolution at work in the government department which concerns us most.

As the reports bear the signatures of men who are competent to criticise, their opinions and advice will undoubtedly have great influence in moulding the training of pupil teachers, especially in reference to the examination. Space forbids dealing with the reports *in extenso*, but there are many points of vital interest touched on which deeply concerns all candidates. We will take the subjects in order:—

English Literature and Composition.—"The exercises in parsing and analysis were worked with very fair success." "The questions on historical grammar were not often attempted," because few pupil teachers know anything of Latin or French. The answers to the questions on the Special Books were satisfactory as far as a general knowledge of the text was concerned, but less so as showing any training in language. The student does not think for himself. He crams up an annotated text-book—"with the inevitable consequence of failure when he is thrown on his own resources." "At present the pupils read a great deal which they do not understand, and much ignorance is being more or less skilfully concealed under vague and slipshod expression."

The general composition is condemned wholesale. "It is surprising and shocking in these days to note the poverty of language and expression. Many do not show ability even to write correct English." And again, "There was seldom any sense of form or style; the correct construction of ordinary sentences seemed to be unknown; the meaning of common words was mistaken."

What is the remedy for this? The only remedy is what has been insisted on in these columns for years—(*a*) Wide reading of good English classics; (*b*) Steady practice in exercises in composition.

Students who have worked the essays set each month and followed the advice on language will not be among the worst in the examination.

History.—"The paper set was intended to ascertain not merely whether a knowledge of leading facts had been acquired, but rather whether the students had been taught to see the connection between different events, the bearing of one set of facts upon another set of facts; whether they had been taught to think about their history, to use their imagination, and whether they had been in the habit of looking carefully at a question in order to understand its full meaning before answering it. *The result is unsatisfactory and depressing.*"

The general mistakes were (*a*) Ignorance of facts. Some instances are given. "The Milky Way was one of the Roman Roads." "The Peasant's Revolt was caused by the Fire of London," &c.; (*b*) Questions were not understood; (*c*) Answers were not relevant; (*d*) Absence of any appreciation of cause and effect; (*e*) Composition poor.

Geography.—Average mark of the men, 48%; of the women, 37%.

"The papers showed a fairly high level of actual knowledge."

The chief defects noted are (*a*) Too much reliance is placed on the study of text-books, and there is insufficient reference to good maps; (*b*) Composition is conspicuously weak.

Arithmetic.—"The marks obtained by the men are reasonably satisfactory, those of the women pupil teachers leave considerable room for improvement, while the rest are beneath contempt. The questions did not afford much opportunity for candidates who have been trained to depend upon rules and the manipulation of figures—about half the paper could have been worked mentally by any one well acquainted with the principles of the subject."

The paper and the notes thereon are considered below in the course.

Elementary Science.—"Most of the work is dreary useless matter, of no value to the candidates as knowledge, and a hindrance rather than an advantage to good school teaching."

The questions are framed so as to exclude bookwork as far as possible.

These criticisms, though somewhat dispiriting, are extremely useful as indicating the mistakes which all thoughtful students should avoid.

Work to be Prepared.

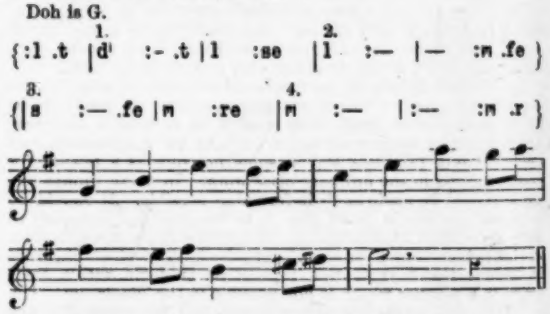
1. *Reading and Repetition.*—These subjects must receive continual care. Being letter perfect is not enough, there must be intelligence shown in the expression.

2. *Teaching.*—The teaching of "Nature Study." Read up carefully what is said in the "Suggestions" on this subject.

3. *Drawing.*—Students now should be fairly proficient in this subject. Tests should be taken against time; probably few can complete the drawing in the time allowed, but all the main lines must be sketched in and a sufficient part of the detail finished and lined in. Some part *must* be completely finished. I shall be pleased to criticise any specimens submitted to me.

4. *Music.*—Syncopation and translation into Staff Notation. The following is last year's paper:—

Doh is G.



(The above is one continuous tune of eight bars.)

(1) Translate the first four measures into the Staff Notation. Write the key and time signatures.

(2) Translate the last four bars into Sol-Fa Notation.

(3) Write out the first four measures (written in the imperfect method), using bridge notes in bars 2 and 4 to indicate one key remove.

(4) Write out the last four bars in the key of (*a*) one flat, and (*b*) two sharps.

(5) In what keys are the answers to question 4 (*a*) and 4 (*b*)? In what key is the piece of music at the head of the paper?

(6) Write out the last four bars in $\frac{3}{4}$ time, halving the value of each note and rest.

(If any difficulty is found write for assistance.)

5. *Penmanship.*—This is still weak with many students, but there is yet time to improve, as far as the copy setting is concerned. Study the rules in the *Practical Teacher Copy Book*, and practise daily.

6. *Composition.*—Write one or two essays each week on such subjects as—

(*a*) The peculiarities in character and customs of the people in any district of the country with which you are familiar.

(*b*) The considerations by which you would be guided in the choice of a profession or business.

(*c*) The advantages and disadvantages of conformity to fashion in dress.

(These subjects were set last year.)

(*d*) The termination of the Russo-Japanese War.

(*e*) The importance of the forthcoming visit of the Prince of Wales to India.

(*f*) The character of Henry V. as depicted in the play.

(*g*) Life on the Borders, as indicated in *Lay of the Last Minstrel*.

Read up your subject if necessary. Arrange your ideas in order, and write in your best style, without undue attempts at elaboration. The beginning of a new set of ideas should be marked by commencing a new paragraph.

Notes.—(*a*) This is an excellent test as to the powers of observation. Each district has some peculiarities in character and customs which differentiate it from other parts, but the young student who has passed his life in one place naturally fails to see these peculiarities, and hence the subject is for such a student by no means easy.

(*b*) This is a very good subject in some respects, but not so in others. There are few pupil teachers who chose their profession after consideration—the parents usually do this. An adult would be influenced in his choice by (1) the amount and expense of the preparation required, (2) the number of hours demanded, (3) the prospect of advancement, (4) social position, (5) last, but not least, the amount of remuneration which would be received.

(*c*) The advantages of conforming to fashion are few; it prevents a person appearing *bizarre*. The disadvantages are obvious—(1) An increased expense, (2) the adoption of styles utterly unsuitable to the individual, and often detrimental to health. Women dress to please their neighbours, the pleasure in a new hat lies not in its possession, but in its exhibition to those who are less fortunate. Much of the expenditure on clothes is due to a fear of appearing too poor to buy (the modern fetish of wealth), and also to the fact that manufacturers make articles which soil or wear out soon.

(*d*) This should be easy to those who follow the newspaper. The article in last month's *Practical Teacher* will supply material.

(*e*) The reason why the British Empire is standing firm instead of crumbling away like the ancient empires is that the government is "broad-based upon the people's will." It is not a mass of states held together by martial law, and having no common interests or speech—the colonies are merely Greater Britain. The one great exception is India, which is held as a conquered territory. It is ruled justly, and hence there is peace and improvement, but it must never be forgotten that India with its three hundred million inhabitants is composed of many states and peoples. Three-quarters of a million square miles are ruled by native princes, and it is to preserve their friendship and co-operation that an occasional State visit is wise. The great princes, who objected to being under the heel of a trading company, willingly welcomed the Queen as Kaisar-i-Hind. The gorgeous East is the home of pomp and ceremonial, and the future king will be cordially welcomed, and his visit will undoubtedly strengthen the bonds of union between East and West.

(*f*) and (*g*) can be answered from the text-books. You might well read Scott's account of the Scottish Borderers for further information.

(Send an essay up for criticism. I shall be pleased to give a small book prize again for the best essay on either of the foregoing subjects.)

7. *English.*—(1) Learn fifteen roots and meanings each week.

(2) Read up anything you can of the literature of England. *Great Authors* (published by Nelson) is an excellent book for giving an introduction to the chief writers.

(3) *Henry V.*, Act 5, Prologue and Scene 1.

(The majority of the questions last year required explanations to be given of passages taken from the books set. Every candidate must understand clearly what is read, and be able to express the meaning in his or her own words.)

The question on etymology was—

"Select any six of the following words, and comment on any points of interest in their formation: riches, children, woman, kine, seldom, whose, rather, Lady Day, daisy."

The answer expected was something like the following:—

Riches.—A false plural, Middle English = *richesse*, from the French *richesse* = wealth. Other examples of false plurals are alms (aelmesse), eaves (yfesse) news.

Children.—A double plural, the *r* being one inflection for plural and *en* another.

Woman.—A curious corruption of the Anglo-Saxon *wif man* = *wife man*, *man* being used for both sexes.

Kine.—Another double plural. The Anglo-Saxon for *cow* was *cu*, plural *cy*. To this plural form *ky*, *en* was added in Middle English, hence *kyen* or *kine*.

Seldom.—An adverb formed from the Anglo-Saxon adjective *seld*.

Whose.—The genitive case of the Anglo-Saxon *hwa* = *hwaes*. Very few genitive inflections are left.

Rather.—An adverb, comparative in form from the Anglo-Saxon *rath* = early or soon. *Cf.* Milton, "the *rathe* primrose"; Tennyson, "the men of *rathe* and riper years."

Lady Day.—March 25. The commemoration of the Annunciation to the Virgin Mary. "Our Lady" in the Catholic Church. *Lady* has a peculiar origin. Anglo-Saxon *hlafdige*, the loaf kneader.

Daisy.—Day's Eye, opening with the sunrise and closing with sunset.

8. *Geography.*—The whole of the work has now been covered. The remaining part of the time will be spent in revising special points and in preparing special notes which will be given.

The following is last year's paper:—

(1) Explain as fully as you can how you would utilise the physical features of any district with which you are specially acquainted, for the purpose of giving young children their first notions of geography.

(Read up what is said in the "Suggestions" about this.)

(2) In teaching the geography of Europe (including the British Isles) to a Fifth Standard what countries would you study in some detail, and over which would you pass somewhat cursorily? Give reasons in each case for your answer.

(3) What are the geographical conditions necessary for the production of wheat, rice, and cotton? In what parts of the world are they principally grown?

(The examiners note that "geographical" conditions were interpreted as "climatic" conditions only.)

(4) Specify the routes taken by the main lines of two of the following railways, naming two or three towns of importance through which each of these two railways passes:—Great Eastern, Great Western, Midland, London and North-Western.

(5) "India is a continent rather than a country." Discuss as fully as you can the truth of this statement.

(Examiners say "generally avoided. The size and prominent physical boundaries are the points principally dwelt upon, the variety of states, languages, races, and religions being overlooked.")

(6) Specify the position of and mention any facts of historical or commercial importance in connection with York, Grimsby, Barrow, Gravesend, Chepstow, Peterhead, Dunkeld, Melrose, Coleraine, and Drogheda.

(7) Name in order of importance the provinces of the Dominion of Canada. How is the Dominion governed (1) as a whole; (2) in its various divisions?

(8) Enumerate and describe briefly the chief British possessions in the West Indies, stating their principal exports. What special difficulties do West Indian merchants have to encounter?

(9) By what routes does England trade with Australia? Name the chief Australian ports, describing their position and mentioning the chief exports and imports.

(10) Give the exact position of, and mention any point of interest in connection with, four of the following:—Strasburg, Rheims, Baku, Shanghai, Deccan, Vancouver, Transvaal, and Durban.

(11) Explain carefully the causes of the flooding of the Nile. Into what natural zones may the Nile valley be divided?

(12) Name and give the position of the chief English, French, and German possessions in Africa, mentioning points of special importance (if any) which each may possess?

9. *History.*—Henry VIII.

Read up this reign, and pay especial attention to the following points:—

(1) Henry's foreign policy.

OUR TUTORIAL SECTION

OUR PUPIL TEACHERS' AND SCHOLARSHIP COURSE.

BY ARTHUR T. FLUX,

Late Principal of the Belvedere Pupil Teacher Centre, First on Scholarship List; Author of "Scholarship School Management," "Building of the British Empire," etc.

SCHOLARSHIP COURSE FOR 1905 AND 1906.

Eleventh Month—November.

BEFORE dealing with the next month's work, I wish to direct the attention of all students to the "Special Reports on the Papers worked by Candidates at the King's Scholarship Examination, 1904," which has just been issued by the Board of Education. This is an excellent idea, and is another instance of the peaceful revolution at work in the government department which concerns us most.

As the reports bear the signatures of men who are competent to criticise, their opinions and advice will undoubtedly have great influence in moulding the training of pupil teachers, especially in reference to the examination. Space forbids dealing with the reports *in extenso*, but there are many points of vital interest touched on which deeply concerns all candidates. We will take the subjects in order:—

English Literature and Composition.—"The exercises in parsing and analysis were worked with very fair success." "The questions on historical grammar were not often attempted," because few pupil teachers know anything of Latin or French. The answers to the questions on the Special Books were satisfactory as far as a general knowledge of the text was concerned, but less so as showing any training in language. The student does not think for himself. He crams up an annotated text-book—"with the inevitable consequence of failure when he is thrown on his own resources." "At present the pupils read a great deal which they do not understand, and much ignorance is being more or less skilfully concealed under vague and slipshod expression."

The general composition is condemned wholesale. "It is surprising and shocking in these days to note the poverty of language and expression. Many do not show ability even to write correct English." And again, "There was seldom any sense of form or style; the correct construction of ordinary sentences seemed to be unknown; the meaning of common words was mistaken."

What is the remedy for this? The only remedy is what has been insisted on in these columns for years—(*a*) Wide reading of good English classics; (*b*) Steady practice in exercises in composition.

Students who have worked the essays set each month and followed the advice on language will not be among the worst in the examination.

History.—"The paper set was intended to ascertain not merely whether a knowledge of leading facts had been acquired, but rather whether the students had been taught to see the connection between different events, the bearing of one set of facts upon another set of facts; whether they had been taught to think about their history, to use their imagination, and whether they had been in the habit of looking carefully at a question in order to understand its full meaning before answering it. *The result is unsatisfactory and depressing.*"

The general mistakes were (*a*) Ignorance of facts. Some instances are given. "The Milky Way was one of the Roman Roads." "The Peasant's Revolt was caused by the Fire of London," &c.; (*b*) Questions were not understood; (*c*) Answers were not relevant; (*d*) Absence of any appreciation of cause and effect; (*e*) Composition poor.

Geography.—Average mark of the men, 48%; of the women, 37%.

"The papers showed a fairly high level of actual knowledge."

The chief defects noted are (*a*) Too much reliance is placed on the study of text-books, and there is insufficient reference to good maps; (*b*) Composition is conspicuously weak.

Arithmetic.—"The marks obtained by the men are reasonably satisfactory, those of the women pupil teachers leave considerable room for improvement, while the rest are beneath contempt. The questions did not afford much opportunity for candidates who have been trained to depend upon rules and the manipulation of figures—about half the paper could have been worked mentally by any one well acquainted with the principles of the subject."

The paper and the notes thereon are considered below in the course.

Elementary Science.—"Most of the work is dreary useless matter, of no value to the candidates as knowledge, and a hindrance rather than an advantage to good school teaching."

The questions are framed so as to exclude bookwork as far as possible.

These criticisms, though somewhat dispiriting, are extremely useful as indicating the mistakes which all thoughtful students should avoid.

Work to be Prepared.

1. *Reading and Repetition.*—These subjects must receive continual care. Being letter perfect is not enough, there must be intelligence shown in the expression.

2. *Teaching.*—The teaching of "Nature Study." Read up carefully what is said in the "Suggestions" on this subject.

3. *Drawing.*—Students now should be fairly proficient in this subject. Tests should be taken against time; probably few can complete the drawing in the time allowed, but all the main lines must be sketched in and a sufficient part of the detail finished and lined in. Some part *must* be completely finished. I shall be pleased to criticise any specimens submitted to me.

4. *Music.*—Syncopation and translation into Staff Notation.

The following is last year's paper:—

Doh is G.

(The above is one continuous tune of eight bars.)

(1) Translate the first four measures into the Staff Notation. Write the key and time signatures.

(2) Translate the last four bars into Sol-Fa Notation.

(3) Write out the first four measures (written in the imperfect method), using bridge notes in bars 2 and 4 to indicate one key remove.

(4) Write out the last four bars in the key of (*a*) one flat, and (*b*) two sharps.

(5) In what keys are the answers to question 4 (*a*) and 4 (*b*)? In what key is the piece of music at the head of the paper?

(6) Write out the last four bars in $\frac{4}{4}$ time, halving the value of each note and rest.

(If any difficulty is found write for assistance.)

5. *Penmanship.*—This is still weak with many students, but there is yet time to improve, as far as the copy setting is concerned. Study the rules in the *Practical Teacher Copy Book*, and practise daily.

6. *Composition.*—Write one or two essays each week on such subjects as—

(*a*) The peculiarities in character and customs of the people in any district of the country with which you are familiar.

(*b*) The considerations by which you would be guided in the choice of a profession or business.

(*c*) The advantages and disadvantages of conformity to fashion in dress.

(These subjects were set last year.)

(*d*) The termination of the Russo-Japanese War.

(*e*) The importance of the forthcoming visit of the Prince of Wales to India.

(*f*) The character of Henry V. as depicted in the play.

(*g*) Life on the Borders, as indicated in *Lay of the Last Minstrel.*

Read up your subject if necessary. Arrange your ideas in order, and write in your best style, without undue attempts at elaboration. The beginning of a new set of ideas should be marked by commencing a new paragraph.

Notes.—(*a*) This is an excellent test as to the powers of observation. Each district has some peculiarities in character and customs which differentiate it from other parts, but the young student who has passed his life in one place naturally fails to see these peculiarities, and hence the subject is for such a student by no means easy.

(*b*) This is a very good subject in some respects, but not so in others. There are few pupil teachers who chose their profession after consideration—the parents usually do this. An adult would be influenced in his choice by (1) the amount and expense of the preparation required, (2) the number of hours demanded, (3) the prospect of advancement, (4) social position, (5) last, but not least, the amount of remuneration which would be received.

(*c*) The advantages of conforming to fashion are few; it prevents a person appearing *bizarre.* The disadvantages are obvious—(1) An increased expense, (2) the adoption of styles utterly unsuitable to the individual, and often detrimental to health. Women dress to please their neighbours, the pleasure in a new hat lies not in its possession, but in its exhibition to those who are less fortunate. Much of the expenditure on clothes is due to a fear of appearing too poor to buy (the modern fetish of wealth), and also to the fact that manufacturers make articles which soil or wear out soon.

(*d*) This should be easy to those who follow the newspaper. The article in last month's *Practical Teacher* will supply material.

(*e*) The reason why the British Empire is standing firm instead of crumbling away like the ancient empires is that the government is "broad-based upon the people's will." It is not a mass of states held together by martial law, and having no common interests or speech—the colonies are merely Greater Britain. The one great exception is India, which is held as a conquered territory. It is ruled justly, and hence there is peace and improvement, but it must never be forgotten that India with its three hundred million inhabitants is composed of many states and peoples. Three-quarters of a million square miles are ruled by native princes, and it is to preserve their friendship and co-operation that an occasional State visit is wise. The great princes, who objected to being under the heel of a trading company, willingly welcomed the Queen as Kaisar-i-Hind. The gorgeous East is the home of pomp and ceremonial, and the future king will be cordially welcomed, and his visit will undoubtedly strengthen the bonds of union between East and West.

(*f*) and (*g*) can be answered from the text-books. You might well read Scott's account of the Scottish Borderers for further information.

(Send an essay up for criticism. I shall be pleased to give a small book prize again for the best essay on either of the foregoing subjects.)

7. *English.*—(1) Learn fifteen roots and meanings each week.

(2) Read up anything you can of the literature of England. *Great Authors* (published by Nelson) is an excellent book for giving an introduction to the chief writers.

(3) *Henry V.*, Act 5, Prologue and Scene 1.

(The majority of the questions last year required explanations to be given of passages taken from the books set. Every candidate must understand clearly what is read, and be able to express the meaning in his or her own words.)

The question on etymology was—

"Select any six of the following words, and comment on any points of interest in their formation: riches, children, woman, kine, seldom, whose, rather, Lady Day, daisy."

The answer expected was something like the following:—

Riches.—A false plural. Middle English = *richesse*, from the French *richesse* = wealth. Other examples of false plurals are alms (aelmesse), eaves (yfesse) news.

Children.—A double plural, the *r* being one inflection for plural and *en* another.

Woman.—A curious corruption of the Anglo-Saxon *wif man* = *wife man*, *man* being used for both sexes.

Kine.—Another double plural. The Anglo-Saxon for *cow* was *cu*, plural *cy*. To this plural form *ky*, *en* was added in Middle English, hence *kyen* or *kine*.

Seldom.—An adverb formed from the Anglo-Saxon adjective *seld*.

Whose.—The genitive case of the Anglo-Saxon *hwa* = *hwaes*. Very few genitive inflections are left.

Rather.—An adverb, comparative in form from the Anglo-Saxon *rath* = early or soon. *Cf.* Milton, "the *rathe* primrose"; Tennyson, "the men of *rathe* and riper years."

Lady Day.—March 25. The commemoration of the Annunciation to the Virgin Mary. "Our Lady" in the Catholic Church. *Lady* has a peculiar origin. Anglo-Saxon *hlafdige*, the loaf kneader.

Daisy.—Day's Eye, opening with the sunrise and closing with sunset.

8. *Geography.*—The whole of the work has now been covered. The remaining part of the time will be spent in revising special points and in preparing special notes which will be given.

The following is last year's paper:—

(1) Explain as fully as you can how you would utilise the physical features of any district with which you are specially acquainted, for the purpose of giving young children their first notions of geography.

(Read up what is said in the "Suggestions" about this.)

(2) In teaching the geography of Europe (including the British Isles) to a Fifth Standard what countries would you study in some detail, and over which would you pass somewhat cursorily? Give reasons in each case for your answer.

(3) What are the geographical conditions necessary for the production of wheat, rice, and cotton? In what parts of the world are they principally grown?

(The examiners note that "geographical" conditions were interpreted as "climatic" conditions only.)

(4) Specify the routes taken by the main lines of two of the following railways, naming two or three towns of importance through which each of these two railways passes:—Great Eastern, Great Western, Midland, London and North-Western.

(5) "India is a continent rather than a country." Discuss as fully as you can the truth of this statement.

(Examiners say "generally avoided. The size and prominent physical boundaries are the points principally dwelt upon, the variety of states, languages, races, and religions being overlooked.")

(6) Specify the position of and mention any facts of historical or commercial importance in connection with York, Grimsby, Barrow, Gravesend, Chepstow, Peterhead, Dunkeld, Melrose, Coleraine, and Drogheda.

(7) Name in order of importance the provinces of the Dominion of Canada. How is the Dominion governed (1) as a whole; (2) in its various divisions?

(8) Enumerate and describe briefly the chief British possessions in the West Indies, stating their principal exports. What special difficulties do West Indian merchants have to encounter?

(9) By what routes does England trade with Australia? Name the chief Australian ports, describing their position and mentioning the chief exports and imports.

(10) Give the exact position of, and mention any point of interest in connection with, four of the following:—Strasburg, Rheims, Baku, Shanghai, Deccan, Vancouver, Transvaal, and Durban.

(11) Explain carefully the causes of the flooding of the Nile. Into what natural zones may the Nile valley be divided?

(12) Name and give the position of the chief English, French, and German possessions in Africa, mentioning points of special importance (if any) which each may possess?

9. *History.*—Henry VIII.

Read up this reign, and pay especial attention to the following points:—

(1) Henry's foreign policy.

(2) The Government at home (*a*) under Wolsey, and (*b*) subsequently.

(3) A life of Wolsey: his aims and ambitions.

(4) The Reformation: Henry's attitude.—Note that he was *not* a Reformer, although his acts helped the movement forward considerably. The separation from Rome to gratify a brutal passion rendered events in subsequent reigns easy, which otherwise would have been very difficult.

(5) The suppression of the monasteries and its effect upon the social condition of the poor. What connection was there between the suppression and the Pilgrimage of Grace.

(6) Lives of the chief men must be prepared. The whole of the special period will be dealt with in detail after Christmas.

10. *Arithmetic.*—Work the next 100 exercises in Christian and Collar. The following is last year's paper, with solutions and the examiner's notes:—

(1) How would you lead a class commencing addition of fractions to see the method of adding $\frac{2}{3}$ and $\frac{4}{17}$?

("Badly done. Generally the answers were based upon purely mechanical methods of teaching.") The difficulty is of course to make the class understand the common denominator. This may be done by taking two lines of equal length divided into 24ths and working out the value of each fraction. Or take 24 pence—$\frac{1}{8}=3$d., $\frac{3}{8}=9$d., $\frac{1}{12}=2$d., $\frac{5}{12}=10$d. Total 19d. out of 24d. or $\frac{19}{24}$.

(2) (i.) Simplify $89765\frac{1}{3}-1900$ of $(13866\frac{1}{3}-14900\frac{1}{7}+1135\frac{1}{3}-735\cdot4)$.

(ii.) Find the ratio of (228·48 lbs. + 34·7 cwt. + ·005 tons) to 4·605 tons.

State clearly what is the nature of your answer to (2).

(Involved some easy simplifications. Answers spoilt by unnecessary long cyphering and by inaccuracy.) The thing to avoid, of course, is turning the mixed into improper fractions. "The nature of the answer" is, of course, a *ratio*, not tons or cwts.

(3) A person invests $\frac{3}{5}$ of his capital in a $2\frac{1}{2}$ per cent. stock at 90, a $\frac{1}{4}$ of his capital in a $3\frac{1}{2}$ per cent. stock at 98, and the rest in a $4\frac{1}{2}$ per cent. stock at 108. Find the average rate of interest he receives.

(30 per cent. failed to understand "average rate of interest," for, having obtained the incomes from the various stocks, they deduced the average rate by dividing by 3.)

Suppose capital is £2100. Then $\frac{3}{5}=$£600, $\frac{1}{4}=$£700, the rest = £800.

£600 in $2\frac{1}{2}$ at 90. Income $=\frac{600}{90}\times2\frac{1}{2}$,, $=$£15.

£700 in $3\frac{1}{2}$ at 98. ,, $=\frac{700}{98}\times3\frac{1}{2}$,, $=$£25.

£800 in $4\frac{1}{2}$ at 108. ,, $=\frac{800}{108}\times4\frac{1}{2}$,, $=$£33$\frac{1}{3}$.

Income on £2100 $=73\frac{1}{3}$

,, £100 $=\frac{73\frac{1}{3}}{21}$,, $=3\frac{1}{21}$.

(4) Find by the shortest method (showing your work fully and clearly)—

(*a*) The gain on 280 articles bought at 17s. 9½d. each and sold at £1, 8s. 3½d. each.

(*b*) Cost price for pair of horses sold for 300 guineas at a gain of 20 per cent.

(*c*) The difference between 65 miles and 65 kilometres, given that a kilometre is $\frac{5}{8}$ of a mile.

(*d*) The number of days in a vacation, $\frac{1}{3}$ of which were spent in one town, $\frac{2}{11}$ in another, and 33 hours in travelling.

Ans.—(*a*) Gain on one = 10s. 6d., on 280 = 140 guineas = £147.

(*b*) Cost price of 120 = 100, of 6 = 5, ∴ $\frac{1}{6}$ of 300 = 250 guineas.

(*c*) Difference between 1 mile and 1 kilo. $=\frac{3}{5}$ miles, ∴ $65\times\frac{3}{5}=24\frac{3}{5}$ miles.

(*d*) $\frac{1}{3}+\frac{2}{11}=\frac{11}{33}$, ∴ $\frac{1}{330}=33$ hours, ∴ the whole $\frac{33\times120}{11\times24}$ = 15 days.

(5) Work the following so as to be clearly intelligible to a person unacquainted with the rule of three:—A draper loses 10 per cent. by selling cloth at 15s. a yard. Find at what price he must sell to gain 20 per cent.

(Nearly half failed to observe the restriction imposed.)

Ans.—Take 100 as C.P., losing 10% S.P. = 90, gaining 20% S.P. = 120. Second price $\frac{4}{3}$ of first, $\frac{4}{3}$ of 5 = £1.

(6) Do not work the following question, but give a reason for thinking that the answers suggested are *obviously* wrong:—

(*a*) Multiply £8654, 7s. 11d. by 240. Ans. £2077055, 5s. 6d.

(*b*) Find remainder after making the greatest possible number of packets, each containing ·03 lbs. out of 217 lbs. Ans. $\frac{1}{10}$ lb.

(*c*) Find the income derived from investing £5101 at 3 per cent. after paying Income-tax at the rate of 7½d. in the £.

Ans. £153, 16s. 8½d.

(*d*) Find the cost per metre of cloth at 6s. a yard, 1 metre = 39⅓ inches. Ans. 6s. 6d.

(A large number did not realise what was meant by "remainder." Nearly half did not attempt any part of this question.)

This is a type of question for which many marks should be given, since it is an excellent test of *thought*, and affords no scope for mechanical work.

Ans. (*a*) Since there are 240 pence in £1 the correct answer must be £ only, and not shillings and pence.

(*b*) If each packet contains $\frac{3}{1000}$ of 1 lb. there cannot be $\frac{10}{100}$ left. This would allow of 3 more packets.

(*c*) The income at 3 per cent. is obviously £153·03. This is less than the answer, neglecting the deduction for tax.

(*d*) 6s. a yard is 2d. an inch, ∴ 39⅓ inches cost 78⅔d. = 6·6⅔.

(7) What is the width in metres of a court 16·12 metres long, paved with 2496 tiles, and measuring 31 centimetres long by 17 centimetres wide?

("Exposed a considerable amount of ignorance as to the metric system.")

Ans. 31 cm. = ·31 metr.; 17 cm. = ·17 m.

Area = $2496\times\cdot31\times\cdot17$ metre.

$$\text{Width}=\frac{2496\times\cdot31\times\cdot17}{16\cdot12}=8\cdot16 \text{ metres.}$$

(8) In a school the elder scholars and infants make 96 per cent. and 87 per cent. respectively of the total number of attendances possible. If the infants are $\frac{1}{3}$ of the whole school, find the average attendance per cent. for the whole school.

Ans. 2 at 96 per cent. = 192; 1 at 87 per cent. Total for 3 = 279 or 93 per cent.

(9) A rectangular field measuring $2\times3\times17$ yards by $2\times5\times17$ yards has to be divided into an exact number of square plots, each an exact number of yards in length. In what different ways can this be done? Draw a diagram to illustrate one case.

("Barely 5 per cent. obtained answers that could be considered completely correct.")

Ans. It is evident from the factors given that the squares may be 1 yard or 2 or 17 yards or 34 yards. If 2 yards there are 51 rows of 85, if 17 yards there are 6 rows of 10, if 34 yards 3 rows of 5.

(10) Find the weight of a desk top which measures 3 feet 4 inches by 12 inches by $\frac{1}{8}$ inch if 5 cubic inches of the same material weigh 2 oz.

Ans. Cubic contents $=40\times12\times\frac{1}{8}$ cubic in.

Weight $=40\times12\times\frac{1}{8}\div5\times2$ oz.

$=\frac{40}{1}\times\frac{12}{1}\times\frac{1}{8}\times\frac{1}{5}\times\frac{2}{1}=168$ oz.

(11) If the greatest possible number of rectangular pieces 4" by 5" are cut from a piece of striped calico 17" by 26", find the percentage (correct to the nearest unit) of the whole that would be wasted. Assume that the stripes are parallel to the long edge of both the large and small pieces.

(The common error was to assume that the number of pieces is to be obtained by dividing the area of one by that of the other.)

Ans. The number of strips to be cut—

4" wide from 17" wide = 4

5" long from 26" long = 5 Total 20.

Amount wasted = $(17\times26)-(4\times5\times20)=42$ sq. in. out of 442 sq. in.

Of 442 in amount of waste = 42

1 ,, ,, $=\frac{42}{442}$

100 ,, ,, $=\frac{42\times100}{442}=9.502$. This being more than half, the nearest unit is 10.

Algebra.—Work any general exercises.

11. *Euclid.*—Book II., Props. 1-3, with three or four deductions per week. Women, Props. 37-40, with two or three deductions per week.

12. *Science.*—Phosphorus, marsh gas and coal gas. Composition, manufacture, &c.

Test Questions.

1. Write as specimens of Copy Setting:—

Large hand.—Differentiation.

Small hand.—Thou poor leaf, so sere and frail,
Sport of every wanton gale.

2. Analyse the following and parse the words in italics:—

All this is true, if time *stood still*; which contrariwise moveth so round that a froward retention of custom is as turbulent a thing as an innovation, and they that reverence too much old

times are *but* a *scorn* to the new. It *were* good, therefore, that men in their innovations *would follow* the example of time itself.

3. Construct sentences so as to show you are acquainted with the use and meaning of five of the following phrases:—Amenable to reason; a prey to suspicion; an exaggerated estimate; perverted sense of duty; the infancy of the world; subtlety of wit; a liberal education.

4. Write a short essay on the natural wealth of New Zealand.

5. South America is sometimes called the "Model Continent." Why? Contrast the climates of the East and West.

6. Say what you can of Henry VII.'s home policy. Why were the insurrections against him so easily suppressed?

7. Describe exactly how you would prepare chlorine. What precautions have to be taken, and why? What happens if sodium, turpentine, Dutch metal are respectively placed in three jars of the gas?

8. Work the following:—

(*a*) Find the cost of turfing a ground 10 chains long and 5 chains broad, each turf being 15 in. long and 6 in. broad, 100 turfs costing 1s. 3d. Ans. £217, 16s. 0d.

(*b*) A room 16 feet wide cost £14, 8s. to carpet at 4s. 6d. per yard. Find the length of the room, the width of the pieces of carpet being 18 inches. Ans. 18 feet.

(*c*) A room 16 feet square requires for its walls 6 pieces of paper 18 yds. 2 ft. long and 2 ft. broad. Find the height of the room. Ans. 10½ feet.

(*d*) £8, 11s. 0d. is spent upon the floor of a room 24 feet long and 18 feet wide; the centre of the room is covered with carpet 2 feet wide at 4s. 3d. a yard, leaving a margin of 3 feet all round the carpet; how much per square foot does the margin cost to paint. Ans. 1d.

(*e*) A floor is half as long again as it is broad and contains 13824 square feet; find the length of the shorter side and the cost of flooring at 4½d. per square yard.

Ans. 96 feet; £28, 16s. 0d.

PUPIL TEACHERS' COURSE.

For Candidates' Examination, 1906.

Work to be Prepared.

1. *Reading and Repetition.*—Oral practice must be regularly taken. In addition, there should be a large amount of reading of good English books—standard fiction, historical novels, good poetry, books of exploration and travel. This is a very important part of your education.

2. *English*—

(1) Learn 10 roots and meanings each week.

(2) Conjunctions. Learn a good classification, and note particularly that they are classified on two bases—(*a*) as Co-ordinate and Subordinate, according as they join things of equal rank, or subordinate sentences and phrases to the principal. (*b*) According to their meaning as Simple, Adversative, Hypothetical, Adverbial, &c.

(3) *Marmion.*—Prepare Stanzas 17 to 25. Be prepared to analyse any part and parse any word. Above all, read to understand. If you find any difficulty, do not put the piece down as "stupid" or "dry." The reason probably is that you fail to appreciate the author's meaning, and this is due not to his lack of ability to write, but to yours to understand.

(4) Write an essay each week on such subjects as:—

(*a*) Autumn.

(*b*) Habits.

(*c*) The summary of a story you have recently read.

(*d*) Happiness.

You must make out an analysis of your ideas before commencing to write. Read up the subject if necessary; few students can write a good essay offhand. When the essay has been written, read it through critically, and see if you can improve the phrases or sentences. There is no easy way of acquiring the art of writing good English, it comes by assiduous practice—the more a student reads, the better he writes. Send in an essay occasionally for criticism.

The following notes may assist you:—

(*a*) You need not say autumn is a season, or that it comprises certain months—every one knows that. Describe the time as vividly as you can in reference to summer and winter—the transitional period from one to the other. Point out the different work in the country—spring the sowing, summer the growing, autumn the harvesting, etc.

(*b*) Define a habit—"the tendency to repeat what has already been done." This tendency grows stronger with each repetition; the growth is at first unnoticed, but it may assume alarming proportions, and the habit become so strong that it defies and subdues the will. Quote instances. Hence the necessity of keeping a strict watch on what we do, cultivating what is good, eradicating what is pernicious.

(*c*) The material for this is ready to hand; it needs but selection and expression. The commonest mistake will be to include too many details which are unnecessary to the story. The selection of what to say is in itself good training.

(*d*) Define the term Happiness, and proceed to discuss what constitutes happiness. Note that it is a very elastic term and means different things to different people. Wealth, ease, luxury, unlimited powers of self-gratification do not always make a person happy. You remember the story of the Eastern king who was promised complete happiness if he exchanged shirts with a thoroughly contented man. After a long search he found the contented man, but unfortunately he had no shirt. People with every blessing are miserable, and many in the most wretched conditions are happy.

3. *History.*—The reign of Edward III.

This long reign is a very important one, and affords another example of a strong son following a weak father. The chief interest in the reign centres round the commencement of the Hundred Years' War with France, the causes of which are rarely understood by young students. It was not Edward's claim to the French crown which caused the war. There was a good deal of antipathy between French and English, the former had assisted the Scots in their war, and had made plundering expeditions against the south coast. The King of France had also claimed the sovereignty of Guienne, but the main cause was the wool trade with Flanders (now Belgium). The staple export of England from which the King drew revenue and his subjects profit was the wool sent to Flanders to be made into the famous Flemish cloth. The cities of Flanders had risen in revolt against their feudal lord—the Count of Flanders—who, unable to coerce them, had called in the assistance of the King of France. Now, had the latter obtained power then, he would undoubtedly have stopped or injured the English trade, and it was to preserve this that Edward assisted the Flemings. The claim to the French crown was put forward to obtain the assistance of some of the barons in the north of France. It was not a strong claim. Had the principle Edward put forward been admitted, there were nearer claimants than he.

Study the chief battles carefully with a plan. Ask yourself the questions—*Where* was it fought? *Why* was it fought? How was it won? and what was the result of it? Note also the Scotch invasion and the battle of Neville's Cross. Prepare a life of the Black Prince.

The Black Death and Statute of Labourers are also of great importance as affecting the social condition of the poor. Of these events we shall say more in dealing with the Peasants' Revolt.

4. *Geography.*—The Physical Features of Asia.

Prepare a large outline map and insert all the details to be remembered; or, better still, get a few pounds of clay or plasticene, and model the country from what the atlas and your text-book tells you. A clear idea of the general build is essential to the understanding of the varieties of climate in the various parts.

5. *Arithmetic.*—Ratio and Proportion.

Read up the theory carefully in Christian and Collar. Remember that a ratio is simply the *relation* existing between two quantities of the *same kind*, with reference to their magnitude. There can be no ratio between books and shillings. Proportion is the equality of two ratios. The statement as A : B :: C : D means whatever relation as to size A bears to B, C bears the same to D.

This may be expressed as $\frac{A}{B} = \frac{C}{D}$ or $\frac{B}{A} = \frac{D}{C}$.

The product of the extremes is always equal to the product of the means, and hence if one term is missing it can always be found from the other three.

What is wrong in the following?—

As 2 books : 4s. :: 4 books to 8s.

As 2 horses : £80 :: 3 horses to £120.

As 2 horses : 3 horses :: £80 to 120.

Work as many of the exercises as is necessary to understand the theory thoroughly.

In Proportion, you must be able to work either by the Method of Unity or Proportion.

6. *Algebra.*—Continue exercises in Division.

7. *Geometry.*—Euclid, Book I., Props. 21–24, work two or three deductions per week.

8. *Music.*—The major scale and its intervals.

9. *Science.*—Melting and boiling points, and how affected. Change of weight when substances are heated and the cause of this (generally absorption of or loss of oxygen).

Air and its composition.

10. *Spelling.*—100 words weekly from *Words Commonly Misspelt.*

11. *Penmanship.*—Write a page daily in the *Practical Teacher Copy Book.*

Test Questions.

1. Write as specimens of copy-setting:—

Large hand.—Dicotyledon.

Small hand.—"Daniel Deronda" is one of the works of George Eliot.

2. Analyse the following, and parse words in italics:—

(*a*) It was with pain *that* he felt his mind *wavering while* on the brink between this and the future world.

(*b*) I do not hold him *deserving* of the name of a freeman, who, *thinking as* I do, shall withhold his arm from the cause of his country.

(*c*) I hope you do not think *the worse* of me *for having belonged* to it.

3. Use the following words correctly in sentences:—

Effect—affect; illusion—allusion; respect—retrospect; compare—contrast; reverend—reverent; beautify—beatify.

4. Describe the conquest of Wales.

5. How came Edward I. to invade Scotland?

6. Make a list of the states in the Balkan Peninsula, their capitals, and forms of government.

7. Say what you can of the following:—Iron Gate, Golden Horn, Acropolis, Zante, Adrianople, Belgrade, Bosphorus, Negropont.

8. Describe with a diagram the changes in volume which take place when a piece of ice at $-10°$ C. is melted and the water raised to boiling point.

9. (*a*) Find by Practice the rent of 311 acres 2 roods 26 perches at 5s. 8½d. per rood. Ans. £354, 10s. 3½d.

(*b*) Find by Practice how many acres will supply 53 horses with hay and oats for a year, each horse consuming the produce of 5 acres 3 roods 26 poles. Ans. 313 ac. 1 ro. 18 pls.

(*c*) Find the distance that would be travelled in 3 hours 40 min. 50 sec. at the rate of 24 miles 2 fur. 30 pls. per hour. Ans. 89 miles 4 fur. 31½ pls.

(*d*) A hundred coins, consisting of half-crowns and florins, are worth £11, 8s. 0d.; find the number of half-crowns and florins. Ans. 56 and 44.

10. Give the mental effects of the various notes of the scale. How may these be modified?

All communications respecting this Course to be sent to Mr. ARTHUR T. FLUX, Oakleigh, Belvedere, Kent, together with the coupon of the present number, and a stamped addressed envelope if an immediate answer is required.

OUR CERTIFICATE COURSE FOR 1906.

BY GEORGE COLLAR, B.A., B.SC.,
Head-Master of Stockwell Pupil-Teacher School.

Test Questions on Last Month's Work.

THEORY OF TEACHING.

1. Summarise the difficulties that occur in teaching spelling. In what way can a transcription lesson be employed in teaching spelling?

2. What natural tendencies does Frœbel associate with the period of childhood, and how should they be employed in teaching?

3. What has Frœbel to say on the subject of continuity of development?

ENGLISH LANGUAGE AND LITERATURE.

1. Write a short sketch of three of the following characters:—*Sir Mungo Malagrowther, Richie Moniplies, Lord Glenvarloch, Master George Heriot, Dame Ursula.*

2. Give an account of Nigel's sojourn in Alsatia, or of his first visit to Whitehall.

3. Explain the following words and phrases:—*circumfused, Urim, obsequious, her mural breach, ineffably, hope conceiving from despair.*

ENGLISH HISTORY.

1. What are the chief characteristics of the Tudor Monarchy.

2. Give an account of the life and writings of Sir Thomas More.

3. What is meant by the "New Learning"?

GEOGRAPHY.

1. In what ways are the fisheries of direct and indirect advantages to this country?

2. Account for the development of the following towns:—Middlesborough, Bristol, Reading, and Southampton.

ARITHMETIC.

1. Divide 4·71938264 by 7·94827369 correct to three places of decimals.

2. Multiply 52·523798 by ·7654321 correct to three places of decimals.

3. Explain clearly the difference between the phrases "correct to three decimal places" and "correct to three significant figures."

4. Tell by inspection the number of recurring and of non recurring digits in the decimals produced from $\frac{1}{3}$, $\frac{3}{7}$, $\frac{5}{8}$, $\frac{7}{9}$, $\frac{9}{11}$, $\frac{2}{11}$, $\frac{3}{11}$, $\frac{5}{11}$.

ALGEBRA.

1. Find the factors of the following expressions:—

(*a*) $x^{12} - 1$. (*b*) $(x + 2a)^3 - 8a^3$.

(*c*) $x^3 + y^3 - 64z^3 + 12xyz$. (*d*) $x^3 - 2x^2 + 2x - 1$.

2. Show that $(b - c)^3 + (c - a)^3 + (a - b)^3 = 3(b - c)(c - a)(a - b)$.

GEOMETRY.

1. Find the maximum area of a triangle when two sides are given.

2. Show how to inscribe a square in a triangle so that one side may lie along a side of the triangle.

ELEMENTARY SCIENCE.

1. State the Law of Multiple Proportions. On what evidence is it based?

2. What do you mean by the "indestructibility of matter"? Describe experiments which illustrate the principle.

Notes and Syllabus for November.

ENGLISH COMPOSITION.

Prepare Chapters XI. to XIII. of *The Art of Writing English.* Here we have valuable advice on two very different styles of writing. The student's composition is tested mainly by his ability to write essays. Expound the outlines given in the text-book. Although for examination purposes essays are of supreme importance, yet in the student's own preparation they are not nearly so important as *précis.* Many students can write out a good essay at length, but when they come to take notes of a chapter or of a lecture they are completely at a loss. A good practice in condensation will be got by supposing that the substance of a chapter has to be sent by telegraph. If the student imagines that each word he writes will cost him a halfpenny, he will endeavour to say all he can at the smallest cost. The meaning must, however, be made perfectly clear.

Prepare and write essays on the following:—

1. Avoid extremes.
2. Fame.
3. Sources of happiness.
4. Forms of government.

THEORY OF TEACHING.

Study Chapter IX. of Collar and Crook's *School Management.* Try and realise what is the precise position of grammar in the school curriculum, and notice the relation between the science of grammar and the art of composition. If this relation is

recognised, the advantages of teaching the two concurrently are manifest.

Read carefully the third section of *The Student's Frœbel* on "The Boy," and make notes as you proceed. In the stage of childhood Frœbel considers that the objects with which the child makes acquaintance are simple, *i.e.* the child himself does not recognise them as made up of parts. Each object is also intimately associated with a name. The name and the thing seem inseparable to the child. But the boy begins to recognise language as something apart from the things it denotes, and it is in the boyhood stage that formal instruction begins. The *nursling* was purely receptive, developing simply under the protection and fostering care of its parents; the *child* was allowed to develop itself, and assisted in its endeavours by giving natural expression to its feelings. "In the *boy* grow activity of intellect and will. To raise the activity of will into firmness, to mould and animate a pure, firm, and enduring will, so as to realise and practise genuine humanity, is the chief aim and final goal of the boy's training by school and instruction." The child's active impulses develop into the formative impulses of the boy, who is always anxious to help his parents and to share in their work. If this impulse is rudely repulsed, it will die away; hence the importance of accepting a boy's offer of help, and directing it into a useful channel, or at least of treating the offer with kindness even if it cannot be accepted with convenience. "The healthy boy, simply brought up, never avoids or tries to escape an obstacle or difficulty; he looks for them, and he overcomes them." He gives vent to his natural desires by modelling mountains, rivers, castles, and walls; he has a desire to cultivate a garden of his own—although there are some boys in whom the horticultural instinct is certainly not a strong one. Frœbel strongly recommends that boys should have a garden of their own, and should be encouraged to grow useful products. We would suggest that the boy's taste for the beautiful should be developed by inducing him to cultivate a few flowers, lest he should get hold of the idea that his whole efforts should be directed towards the production of objects which have a market value.

Frœbel deals with the subject of boys' games, and gives some valuable remarks. He shows that in them each boy not only develops his physical strength, but also his mental and moral forces, and that to an even greater extent when the games are organised or associated. Thus in games of this kind a boy has an opportunity of showing "justice, moderation, self-control, truth, faithfulness, kindness, and strict impartiality too"; and we must remember that such qualities, like the physical forces, are developed and strengthened by exercise. In watching boys at play we find them displaying courage, endurance, resolution, and presence of mind; while in their dealings with the weak, or with those who are new to the game, they can show pity, patience, and encouragement. The bully is quite an exceptional creature among boys. So important does Frœbel consider organised play to be in education, that he lays it down as an important principle for municipal governors that "every town ought to have a special playground for its boy-world."

Boys have, moreover, a certain curiosity about the past, and are specially interested in ruins, monuments, and history. They want the present to speak to them and tell their tale, hence their liking for fables and fairy tales.

The chapter closes with an enumeration of the chief faults of boyhood, which Frœbel sets out in strong terms, and traces them to one of two sources—either the development of certain sides of human nature has been wholly omitted, or certain powers and dispositions, meant to be good, have been wrongly developed so as to become distorted. Frœbel denies the truth of the statement frequently made by a certain class of theologians that man is utterly corrupt by nature. "Surely the nature of man is good." . . . "Man in himself is not bad, nor are any human impulses bad in themselves." . . . "If man is to do with self-determination what is divine and eternal, it follows that he *can* and *may* do what is earthly and finite." In dealing with the faults of boys, we must endeavour to find out what good tendency has been perverted, and battle with the habit by which the faulty character has been acquired. The lack of kindly feeling and the existence of selfishness arise from the failure of parental affection and the want of effort in developing the child's natural sympathies towards others. Many boyish faults arise from a want of consideration of the consequences. Frœbel cites examples. Very frequently children become bad because their parents and teachers attribute to downright wilfulness acts which are simply due to want of thought. It is a much less serious error for the teacher to attribute a wilful act to thoughtlessness than to attribute a thoughtless one to wilfulness.

English Literature.

Make a thorough study of *Lycidas;* it is not too long to learn by heart, and is well worth learning. It belongs to that class of poetry known as Pastoral, so called because under the guise of poems and discourses, supposed to have been held by shepherds, the poet sets out some higher things.

The subject of the poem was Edward King, son of Sir John King, Secretary to the Irish Government. He was born in Ireland, and entered Christ's College while Milton was a student there. He seems to have been not only very popular with his fellow-students, but also a young man of great promise, and in 1630, partly through royal favour, he obtained a fellowship. After Milton left Cambridge King was a tutor in his college, and wrote occasional Latin and English poetry. In the Long Vacation of 1637 King started to visit his friends in Ireland, and left Chester Bay on a vessel sailing for Dublin. The vessel, however, ran on a rock and sank, although in calm weather, on the north coast of Wales. King was among those who were drowned, and his body was never recovered.

The news of the death of Edward King caused great grief to Milton, who was still mourning the death of his own mother, which had taken place earlier in 1637.

When the vacation came to an end it was proposed by one of King's fellow-graduates that a collection of memorial verses should be written and published. The original draft of the poem, in Milton's own hand, is preserved at Cambridge, and is simply headed "Lycidas." The whole collection consisted of twenty-three Latin and Greek pieces, and thirteen pieces of English verse, of which "Lycidas" stands last. The other poems are described as "trash" by Prof. Masson, who says, "I have read them one and all, and will vouch that they *are* trash."

In the MS. draft of the poem the title is followed by the words, "In this Monody the Author bewails a learned Friend, unfortunately drowned in his passage from Chester on the Irish Seas, 1637." These words were omitted in the memorial edition, but when the poem was published in 1673 they were given, and were followed by the words, "and by occasion foretells the ruine of our corrupted Clergie then in their height."

In this Pastoral, Milton speaks as a shepherd who is mourning the death of another shepherd who has been one of his intimate friends (lines 23–36). The poet complains that although Lycidas knew how "to sing and build the lofty rhyme," the Nymphs, or Muses, gave no aid "when the remorseless deep closed o'er the head of their loved Lycidas." He says that they were probably playing on the hills formerly frequented by the "old bards, the famous Druids." But he suddenly breaks off in his complaints against the Nymphs, for he remembers that even the Muse who was the mother of Orpheus could not save him from the hands of the enraged women, who tore off the head of Orpheus and threw it into the river Hebrus.

Since poets are not immune from trials and death, the writer asks what boots it to "meditate the thankless Muse," to which Phœbus replies that fate may cut short the poet's thin-spun life, "but not the praise," and that the poet's meed is heavenly fame.

The poet next introduces three mystic personages—

(*a*) "The Herald of the Sea," who inquires into the causes of the wreck, and finds that the winds were not to blame, but

> "It was that fatal and perfidious bark,
> Built in the eclipse, and rigged with curses dark,
> That sunk so low that sacred head of thine."

(*b*) "Camus," the river Cam, who calls Lycidas his "dearest pledge" or child.

(*c*) Then "the Pilot of the Galilean Lake," *i.e.* St. Peter, who speaks in strong terms of the shortcomings of some of the clergy.

Next, in a passage of great beauty the poet calls on all the flowers of the field to come "to strew the laureate hearse where Lycid lies." Then he indulges in pastoral conjectures as to what has become of the body, and calls upon his fellow shepherds to "weep no more," for he is confident that Lycidas is not dead, "but mounted high, through the dear might of Him that walked the waves."

In the last eight lines we have a change of person, and the shepherd swain is not speaking; but we are informed that he has been speaking throughout the poem, so that the piece ceases to be a pastoral, and the closing lines form a short epilogue.

The student should read the poem through several times until he can give a running analysis of it like the above. The mean-

ings of individual words and the allusions should all be mastered with the help of a good dictionary, and such books of reference as a classical dictionary, an encyclopædia, and Brewer's *Dictionary of Phrase and Fable*. As much as possible should be learnt by heart, and indeed we should recommend the student to commit the whole to memory.

Line 7. *Compels me to disturb.* This verb has two nominatives connected by "and," so according to the rules of syntax it *seems* as though the verb should be in the plural. The singular, however, is correct, for the two nominatives are synonymous—the "Bitter constraint" and the "sad occasion dear" both denoting the death of Lycidas.

9. *his peer*, i.e. his equal.

11. *to sing.* This infinitive forms the object of knew; the usual construction is "he knew how to sing." Compare, however, the French expression, "*Il savait chanter.*"

13. *Welter* = to swallow or roll about.

15. *Sisters of the sacred well*, i.e. the Muses. They were nine in number, and presided over the various branches of poetry and over some of the other arts and sciences. Their names were—(1) Clio, the muse of history; (2) Euterpe, of lyric poetry; (3) Thâlia, of comedy; (4) Melpomene, of tragedy; (5) Terpsichore, of dancing; (6) Erato, of love poetry; (7) Polyhymnia, of the sublime hymn; (8) Urania, of astronomy; and (9) Calliŏpē, of epic poetry. Their abode was generally considered to be Mount Helicon, with the sacred well Helicon, but according to other accounts they dwelt on Mount Parnassus, on which was a sacred well or spring called Castalia.

16. *Jove*, the supreme god; called also Jupiter, that is, Jove Pater, or Jove the Father.

22. *Sable shroud*, mourning garments.

29. *Battening our flocks*, feeding our flocks. The verb *to batten* is generally intransitive, and means "to grow fat." Compare "The wolf shall batten on his bones." Milton implies that he and Edward King used to carry on their studies far into the night.

33. *Oaten flute*, a pipe made of the straws of oats.

34. *Satyrs, Fauns.* The former belonged to Greek mythology, the latter to early Italian; but the later Roman writers confused the two classes of beings. Satyrs were much more human; though they had two small horns and a tail like that of a horse or goat, they had human feet; but the Fauns, like the god Pan, were goatlike from the waist downwards.

36. *Damœtas*, a name adopted in the pastoral language for some one who had taken an interest in both King and Milton. It is generally supposed to refer to a Mr. W. Chappell, tutor of Christ's College, Cambridge.

40. *Gadding*, roaming about.

45. *Canker*, a kind of grub that eats out the inside of rose-buds. Compare—

> "She never told her love,
> But let concealment, like a worm in the bud,
> Feed on her damask cheek."
>
> —Shakespeare.

54. *Mona*, the island of Anglesey. Sometimes the name is applied to the Isle of Man, probably because Cæsar, who had only indirect information, said that Mona was midway between Britain and Ireland.

55. *Deva*, the river Dee. Perhaps the song, "Flow, gentle Deva," is known to our readers.

56. *Ay me!* Ay = yes. We generally say, "Ah me!" The pronoun should be parsed as the objective case of exclamation.

58. Orpheus was the son of Calliope, the Epic Muse. Apollo presented him with a lyre, and the Muses taught him how to play it. Consequently "he moved rocks, trees, and mountains, his harmony was such," and when his wife, the nymph Eurydice, died of the bite of a serpent, Orpheus went down to the lower regions, and Pluto agreed to restore Eurydice, on condition that Orpheus led the way up and did not look back; but just as they neared the limits Orpheus looked back to see whether his wife was following him, and so he lost her for the second time. His grief at the loss of his wife so vexed the Thracian women that they tore him to pieces and threw his head into "the swift Hebrus," which carried it to sea, and it floated over to the island of Lesbos ("to the Lesbian shore").

64. *What boots it*, what profits it. "Boots" is from the same root as *better*. Compare *Is there no boot* (*K. Rich. II.*).

66. *Meditate the thankless Muse*, to take up the unremunerative work of a poet. The phrase is borrowed from Virgil's first Eclogue.

67. *Use.* This verb is not now employed in the present if it governs an infinitive. We now say "I used to sport," but not "I use to sport."

68, 69. *Amaryllis, Neæra*, nymphs or shepherdesses.

69. Compare—

> "When I lie tangled in her hair,
> And fettered to her eye."
>
> —Lovelace (*Golden Treasury*, 127).

73. *Guerdon* = reward.

76. *Fury.* The Furies were female deities who executed vengeance on evil-doers. The Fates were three goddesses who presided over human destiny and cut the thread of life. Milton seems to have confused Fates with Furies.

77. *Phœbus*, another name for Apollo, who is represented under many aspects, not only as the god of the sun, but as the god who rewards and punishes, and as the god of song and poetry.

84. *Arethuse*, or Arethusa, a fountain in Ortygia near Syracuse in Sicily. The celebrated pastoral poet Theocritus was born at Syracuse. The Mincius, now called Mincio, is a tributary of the Po, and flows past Mantua, and so was "honoured," because this was the birthplace of Virgil, who wrote the Bucolics, a set of twelve pastoral poems.

88, 89. *My oat proceeds and listens.* This is a very faulty expression. Milton means, "I proceed with my oaten pipe and listen." The oat does not proceed and listen.

90. *Neptune's plea*, in answer to the charge brought against Neptune, the god of the ocean.

96. *Hippotades*, the son of Hippotes. The endings *-ides* and *-ades* are called patronymic suffixes, because they form names for people from the names of their fathers. Compare English Johnson. Hippotades was Æolus, the god and king of the winds, which he kept in a "dungeon" or cave in a mountain.

99. *Panope*, a sea-nymph. She and "her sisters" are all named in Spenser's *Faerie Queene*, IV. xi. 49.

103. *Went*, not exactly opposed to "came," but rather "wended."

106. *Sanguine flower*, the hyacinth. The myth tells us that Hyacinth was a beautiful youth accidentally killed by Apollo striking him on the head with a quoit. From his blood sprang the flower called the hyacinth, on the leaves of which were marks like AI, the Greek word for "woe."

107. *Pledge* = child.

110. *Two massy keys.* The Pope still uses two large keys (crossed) as his armorial bearings.

111. *Amain*, with force.

118. *Shove.* In Milton's time this word was not at all vulgar. "Offence's gilded hand may *shove* by justice" (*Hamlet*). It is an example of the degradation of words.

119. *Blind mouths* = gluttons who cannot see. Apparently Milton uses a metaphor which he does not keep up when he says that the "mouths" scarce know how to hold a sheep-hook.

122. *Recks* = concerns.

130. *Two-handed engine*, i.e. the executioner's sword.

132. *Alpheus*, the chief river of Arcadia, the pastoral port of Greece.

133. *Sicilian Muse*, the muse that inspired Theocritus, the pastoral poet.

138. *Swart star.* The adjective is used in a causative sense; the star itself is not swarthy, but it was supposed to tan people. The star is Sirius, or the Dog-star, and as it is in its greatest splendour during the height of summer, people used to think that the heat was caused by the star.

142. *Rathe*, i.e. early. The positive form is not now used, and the comparative "rather" = sooner is generally used to denote preference and not time.

144. *freaked.* A *freak* is a streak, and the noun *freckle* is a diminutive of it. Freak is allied to the modern word *fleck*.

151. *Laureate*, covered with laurels. It may refer also to Lycidas being himself a poet, and laurel or bay was used to crown poets.

158. *Monstrous*, literally full of monsters. For the suffix compare hazard*ous*, tempestu*ous*, ridicul*ous*.

160. *Bellerus*, a Cornish giant.

161–163. The "Angel" is St. Michael, who is reported to have appeared on St. Michael's Mount, Cornwall, which stretches towards "Namancos and Bayona," places on the coast of France.

166. *Your sorrow.* Notice the metonymy, a figure in which the cause is put for the effect, or *vice versâ*.

169. *Day-star*, i.e. the sun.

170. *tricks his beams*, adorns his rays. Compare "Not tricked and frounced" (*Il Penseroso*, 123).

New-spangled ore, freshly polished metal. *Ore* is from A.S. *ar*, brass or bronze.

176. *Nuptial song*, a reference to Rev. xxii. 17, "The Spirit and the Bride say, Come."

CLOUGH'S CORRESPONDENCE COLLEGE TEMPLE CHAMBERS, LONDON, E.C.

The following **196** Students of CLOUGH'S CERTIFICATE CLASS for JULY 1905 have notified that they have been placed in the

FIRST CLASS.

Mr. J. H. **Matthews,** Croft View, Aldridge, Walsall.
Miss M. **Flood,** 6 Jubilee Terrace, Colley End, Paignton.
Miss F. C. **Holloway,** Derby Road, Marehay, Derbys.
Miss S. K. **Speller,** Ecklinville, Old Tiverton Road, Exeter.
Miss J. R. **Montgomerie,** 1 Palmerston Drive, Litherland.
Miss A. M. **Hudson,** 71 Willow Grove, Lancaster.
Miss F. **Bamford,** 44A Wakefield Road, Moldgreen, Huddersfield.
Miss A. **Cornwell,** 30 Davis Street, Plaistow, E.
Mr. E. W. **Clayson,** 55 Broad Green, Wellingboro'.
Mr. H. G. **Tagart,** "Corriesyke," Bockhampton Road, Kingston-on-Thames.
Miss E. **Hilton,** 139 Leigh Road, Boothstown, near Manchester.
Miss H. **Child,** 5 Stanley Terrace, Batley.
Mr. E. **Downes,** Decoy Farm, Besthorpe, Attleboro', Norfolk.
Miss A. **Ingham,** Regent House, Breightmet, Bolton.
Miss E. **Long,** Lyndhurst Villas, 13 Magdalen Road, Norwich.
Miss E. I. **Beattie,** 61 Malcolm Street, Heaton, Newcastle-on-Tyne.
Miss G. **Ridgway,** Railway Cottages, Cheadle Hulme.
Miss E. **Colborne,** 9 County Road, Swindon.
Miss G. **Blenkinsop,** Tyne View, Winlaton.
Miss F. **Barstow,** Vine House, Cleckheaton.
Miss S. A. R. **Grove,** Watling Street, Wilnecote, Tamworth.
Miss B. **Skinner,** 4 Meadow Street, Exmouth.
Miss M. M. **Morris,** Milson Cott., Ringwood Road, Poole.
Miss L. **Blundell,** 1 Charlotte Street, Brinnington, Stockport.
Miss F. E. **Lee,** 22 Oakley Terrace, Sheerness.
Miss D. E. F. **Allen,** 15 Brunswick Street, Kensington, Bath.
Miss D. **Allen,** 16 Richmond Road, Oxford.
Miss A. **Lake,** Fairlea, Brixham.
Miss G. E. **Smith,** 2 Atholl Villas, Crescent Road, Brentwood.
Miss M. **France,** 2 Ashworth Terrace, Ashworth Road, Dewsbury.
Miss C. M. **Scott,** Fielding's House, Charlton Buildings, Twerton-on-Avon, Bath.
Miss T. **Bailey,** Heathfield, Higher Heysham.
Miss E. J. **Deane,** 5 Loughboro Terrace, Tiverton.
Miss I. E. **Maddox,** 8 Russell Street, Dresden, Stoke-on-Trent.
Miss A. C. **Brough,** 101 Chaplin Road, Longton, Staffs.
Miss H. **Groenwood,** 9 The Park, Baildon.
Sister **Honor Mary,** St. Michael's School, Wantage.
Mr. E. **Jesty,** "Helmdon," Grove Avenue, Yeovil.
Miss E. **Tipping,** 11 Rutland Road, Ilford.
Miss F. M. **Overton,** Woodstock, Oxon.
Miss G. **Price,** 245 North Woolwich Road, West Silvertown.
Miss M. G. **Armistead,** 61 Elswick Row, Newcastle-on-Tyne.
Miss A. M. **Wilson,** 37 Havelock Street, Kettering.
Miss L. A. **Pulker,** 3 Castle Street, Banbury.
Miss M. E. **Duggins,** Lillington, Leamington Spa.
Miss A. A. **Duggins,** Lillington, Leamington Spa.
Miss M. E. **Jennings,** 57 Albert Street, Mansfield Woodhouse, Notts.
Miss M. M. **Cochrane,** 40 Darlington Street, Cheetham Hill, Manchester.
Miss A. M. **Gledhill,** 273 West Street, Crewe.
Miss A. M. **Griffiths,** Toll End Road, Ocker Hill, Tipton.
Miss S. **Crawshaw,** Fern Bank, Bury New Road, Whitefield.
Miss E. M. **Davis,** 52 Ablewell Street, Walsall.
Miss E. **Moore,** 9 Devonshire Street, Keighley.
Miss A. C. **Cawley,** 22 Wallace Street, Castle, Northwich.
Mr. E. **Thomas,** 105 Rhys Street, Trealaw, Glam.
Miss E. B. **Sterry,** Meadow Croft, Powell Street, Cannock Road, Wolverhampton.
Mr. A. V. **Yockney,** 93A Gilesgate, Durham.
Miss M. E. **Wright,** 4 Victoria Street, Pensnett, near Dudley.
Mr. W. **Day,** 20 Lindley Street, Mansfield, Notts.
Miss E. M. **Walker,** 14 Eastborough, Scarborough.
Miss M. M. **Besley,** 136 Hempshaw Lane, Stockport.
Mr. F. **Viney,** 69 Gordon Road, Gosport.
Mr. G. **Watson,** 16 Approach Road, Priory Park, St. Albans.
Miss E. **Bennell,** 17 Ash Grove, Stoney Stanton Road, Coventry.
Miss A. **Hamilton,** 28 West Street, Wallsend.
Mrs. E. **Sharp,** 47 Fleece Street, Buttershaw, Bradford.
Miss M. K. **Hutton,** 56 Yew Tree Road, Withington, Manchester.
Miss M. E. **Jelley,** Market Place, Shepshed.
Miss L. A. **High,** 106 Hewthwaite Terrace, Carnforth.
Miss S. **Thorne,** 15 Catherine Terrace, Annfield Plain, R.S.O., Durham.
Miss E. **Heller,** Station Road, Fowey, Cornwall.
Miss M. **Donovan,** 7 North Parade, Clitheroe.
Miss J. **Silverwood,** 6 Jubilee Road, Doncaster.
Miss M. H. **Manning,** 10 London Road, Reading.
Miss L. V. **Whalley,** 145 Blackburn Road, Darwen.
Miss E. **Storey,** 44 Gloucester Road, Carlisle.
Mr. J. **Morgan,** 6 Vaughan Street, North Skelton-in-Cleveland.
Miss N. **Horlock,** The Anchorage, Mistley, Essex.
Miss A. **Shatwell,** 12 Gartside Street, Ashton-under-Lyne.
Miss E. L. **Smith,** 70 Marshall Street, West Smethwick, near Birmingham.
Miss E. **Blower,** 80 The Crescent, Northwich.
Miss A. R. E. **Roberts,** 8 Whitehall Road, Handsworth, Birmingham.
Miss K. **Paterson,** 20 Queen's Road, Fairfield Road, Buxton.
Mr. H. J. **Ashby,** Sailors' Orphan Homes, Newland, Hull.
Miss M. M. **Rasey,** Carrington House, Lansdowne Road, Worcester.
Miss I. **Baty,** 2 Coleridge Avenue, West Hartlepool.
Mr. L. J. **Trant,** "Fernville," Church Street, Brixham.
Miss H. **Ward,** "Thrislington," Park Road, West Hartlepool.
Miss C. E. **Pye,** 2 Russel Street, Stafford.
Miss B. **Smith,** 47 Brick Kiln Street, Harts Hill, Brierley Hill.
Miss E. **Hodsman,** 34 Lower Eldon Street, The Groves, York.
Miss E. **Watson,** 22 Harbottle Street, Newcastle-on-Tyne.
Miss G. M. **Evans,** John Street, Eckington, near Sheffield.
Miss F. E. **Soper,** 163 Tayb ridge Road, Clapham Common, S.W.
Miss E. **Lord,** 6 Stanley Street West, Sowerby Bridge.
Miss F. A. **Hanna,** 14 Archdale Road, East Dulwich, London, S.E.
Miss M. **Woodhouse,** Attleborough, Wimborne Road, Bournemouth.
Miss A. E. **Jacques,** Langwith, Heslington, Yorks.

Mr. G. E. **Ash,** Somerset Place Schools, Stoke, Devonport.
Mr. R. **Akester,** 213 The Boulevard, Hull.
Mr. F. C. **Ray,** "Parkdene," Vale Road, St. Leonards-on-Sea.
Mr. A. P. **Anderson,** High Street, Eynsham, Oxon.
Miss H. M. **Dixon,** 15 Marlboro' Terrace, Bingley.
Miss E. M. **Widdup,** 24 Northcote Terrace, Undercliffe, Bradford.
Miss A. M. **Smith,** 67 Wilson Road, Handsworth, Birmingham.
Miss M. E. **Hartley,** Cumberland Villa, Rydal Road, Lancaster.
Miss F. **Hughes,** Convent of Notre Dame, Blackburn.
Miss A. **Lewis,** 94 Queen's Road, Go-port.
Miss J. M. **King,** 1 Cave Road, Plaistow, E.
Miss A. F. **Paget,** 10 Biggerstaff Road, Stratford, E.
Miss H. L. **Skemp,** Gratton House, Cheltenham.
Miss G. **Sanderson,** 3 Cambridge Avenue, Whitley Bay, Northumberland.
Miss M. **Pendlebury,** 117 Lynden Lea, Bury Street, Heywood.
Miss A. B. **Wood,** Fern Bank, Jack Lane, Droylsden.
Miss A. A. **Hodgson,** West View, Keswick, Cumberland.
Miss L. **Calvert,** 175 High Street, Skelton-in-Cleveland.
Miss E. **Wood,** Shaw Street, Holywell Green, near Halifax.
Miss M. E. **Dicks,** 29 Belgrave Crescent, Bath.
Miss E. **White,** 99 Molineux Street, Wolverhampton.
Miss C. M. **Richardson,** "Hope View," Denton, near Manchester.
Miss M. **Ellis,** 28 Broomfield, Smethwick.
Mr. S. K. **Candy,** 7 Park Road, Fore Street, Chard.
Mr. W. J. **Stevenson,** 11 Gladstone Street, Workington.
Miss E. E. **Radway,** Stratton Villa, Brookside, Ascot.
Miss F. E. **Boyes,** Highfield Road, Bromsgrove.
Mr. W. B. **Stockton,** Holly Villa, Clifton Street, Alderley Edge.
Miss L. A. J. **Jones,** 15 Hart Street, Ulverston.
Mr. C. W. **Harris,** 13 Fashoda Road, Selly Park, Birmingham.
Mr. F. P. **Holt,** 7 Rhoda Street, Nelson.
Miss M. **Watson,** Oakroyd, West End, Morecambe.
Miss A. **Greenwood,** 52 Gilling Gate, Kendal.
Miss L. **Cohen,** 93 Bignor Street, Hightown, Manchester.
Miss W. **Gard,** 6 Seymour Avenue, Plymouth.
Miss E. M. **Holmes,** Stoneleigh, 83 Pollard Lane, Bradford.
Miss M. E. **Bunce,** Fern Bank, Stump Cross, Halifax.
Miss M. **Broadbent,** 3 Crown Buildings, Triangle, near Halifax
Mr. H. A. **Kerry,** Irving Terrace, Bolton-on-Dearne, Rotherham.
Mr. W. **Duckett,** "The Hermitage," Boxley, Maidstone.
Miss E. **Ellin,** 35 Bacheler Street, Hull.
Miss J. **Jeffery,** 8 Mermaid Street, Rye, Sussex.
Miss A. **Reay,** 11 London Road, Carlisle.
Miss P. **Newitt,** Warwick Villa, Victoria Street, Slough.
Miss F. **Lunn,** 30 Napier Road, Luton, Beds.
Mr. R. G. **Hewitt,** 157 Winchester Road, Higham's Park, Walthamstow, E.
Miss A. **Wain,** Southport House, Granville Street, Boston, Lincs.
Miss N. M. **Colvill,** 14 Institute Road, Chatham.
Miss L. E. **Longden,** 27 Bradwell Lane, Porthill, Longport.
Miss S. A. **Smith,** 110 Manchester Road, Tyldesley, Lancs.
Miss M. E. **Jenkins,** Sidwella, William's Avenue, Wyke Regis, Weymouth.
Miss M. **Thompson,** 10 Choppington Street, Newcastle-on-Tyne.
Miss M. **Nixon,** 8 Eldon Place, Leeds.
Miss A. H. **Carnie,** 38 Brantfell Road, Blackburn.
Miss V. L. **Pendered,** 137 Oxhill Road, Handsworth, Birmingham.
Mr. A. **Whittaker,** 236 New Bank Street, Longsight, Manchester.
Miss M. **Wood,** 9 Gordon Villas, Bowerham, Lancaster.
Miss M. **Hedges,** 199 Bloxwich Road, Walsall.
Miss E. **Tasker,** 107 Burnley Road, Accrington.
Miss J. **Brown,** 1 Corporation Road, Audenshaw, near Manchester.
Miss C. **Whiles,** Laurel Villa, Bacheler Street, Hull.
Miss M. B. **Lobb,** 13 Sea View Terrace, Plymouth.
Miss H. **Gerrard,** 29 Buckingham Road, Aintree.
Miss L. **Juett,** 85 Toothill Road, Loughboro.
Miss M. A. **Hyslop,** Dunsopp House, Lucy Street, Blaydon-on-Tyne.
Mr. E. **Bullard,** 110 St. Peter's Street, Lowestoft.
Miss M. **Jenkin,** Springfield Farm, St. Blazey Gate, Par Station.
Miss E. W. **Taylor,** 73 Deacon Road, Kingston-on-Thames.
Miss F. M. **Thomas,** 54 King's Bench Street, Hull.
Miss G. **Morton,** 38 Weymouth Street, Watford.
Miss F. E. **Charlick,** 36 Grenville Road, St. Indes, Plymouth.
Miss E. M. **Haslam,** Dunstan Villa, Sheepbridge, Chesterfield.
Miss S. J. **Hoyle,** 21 Coal Pit Lane, Mount Outlane, Huddersfield.
Miss R. **Ackland,** 44 Spilsby Road, Skirbeck, Boston.
Miss A. M. **Hill,** 114 Manchester Road, Tyldesley.
Miss J. **Nattress,** 110 Addison Road, Newcastle-on-Tyne.
Miss L. M. **Holland,** 36 Rochdale Road, Heywood.
Miss F. **Mason,** "The Leys," Stockton, Rugby.
Miss E. **Gaukrodger,** 6 Montague Street, Sowerby New Road, Sowerby Bridge.
Miss F. M. **Leeming,** St. Stephen's School, Shepherd's Bush, W.
Miss F. **Dronfield,** Church Street, South Normanton, Derby.
Miss H. B. **Robinson,** 79 Hartington Street, Newcastle-on-Tyne.
Miss M. **Broomfield,** 3 Tillingham Villas, Rye, Sussex.
Miss E. J. **Bates,** Barrow-on-Humber, Hull.
Miss E. M. **Shimmin,** 11 Adelaide Terr., Woodburn Road, Douglas, Isle of Man.
Miss L. **Sayer,** 9 Gladstone Terrace, Gateshead-on-Tyne.
Miss F. E. M. **Roberts,** 108 Purser Road, Northampton.
Miss L. L. **Galton,** King Street, Leek, Staffs.
Mr. T. H. **Hince,** 10 Havelock Place, Backworth.
Miss B. **Makinson,** Ince Hall, Ince, near Wigan.
Miss L. **Langford,** 1 Ivy Villas, Craigdale Road, Romford.
Miss E. M. **Wellings,** Coleham Head, Shrewsbury.
Mr. A. H. **Barlow,** care of Mrs. Sharman, Jubilee Park, Clown, near Chesterfield.
Miss M. M. **Smith,** 23 Castle Terrace, Hirst, Morpeth.
Miss H. H. **Jeff,** 169 Park Road, Hockley.
Mr. E. **Hewines,** 3 Selborne Street, Walsall.
Miss M. **Kay,** 32 Swan Lane, Hindley Green, near Wigan.
Mr. C. F. **Davies,** 14 Alfred Road, Roath Park, Cardiff.

*** The above Remarkable List of Successes furnishes striking testimony to the value of the tuition provided in this Class.

For Prospectus and full particulars of any of Clough's Classes, write at once to—

The SECRETARY, Clough's Correspondence College, Temple Chambers, London, E.C.

181. Compare Rev. vii. 17.

183. *Genius of the shore*, a tutelary deity or protecting spirit to those who sail along the shore.

186. *Uncouth swain*, the unknown youth. The adjective is from A.S. *cunan*, to know.

188. *Stops*, the holes in a flute or other pipe at which the air may be *stopped* from coming out.

189. *Doric lay*, his pastoral poetry. Doric architecture and Doric poetry were noted for their simplicity. The Dorians were a pastoral people, and their dialect was that of the country people. It was used by Theocritus in his pastoral poetry. Compare—

"The Doric reed once more
Well pleased I tune."

—Thomson's *Autumn*.

193. The last line is generally misquoted. Notice Milton wrote, "To-morrow to fresh *woods*," not *fields*.

English History.

Finish the Tudor Period. In addition to the text-book, the student should read Seeley's *Expansion of England*, Creighton's *Age of Elizabeth* (Longmans' Epochs), Beesly's *Queen Elizabeth* (Macmillan's *Twelve English Statesmen*), Macaulay's Essay on *Lord Burleigh*.

See last year's notes for the rise of the Spanish Monarchy. Pay attention to the exploits and adventures of British seamen, particularly to the defeat of the Spanish Armada. The social question in Elizabeth's reign is important, and the attempts to remedy troubles by the Poor Laws should be studied. The ecclesiastical policy and relations with Ireland make up the rest of the important matters of the period.

Geography.

Prepare the geography, both physical and political, of Scotland and Ireland.

Arithmetic.

Study the Metric System, chapters xxiv.–xxvi. of Christian and Collar, and also Practice and Bills. The last two rules afford great opportunity for skill in finding short methods. The examination will enable the student who is familiar with good methods to score higher marks than the merely mechanical worker.

Algebra.

Go to the end of chapter xxii. The questions on fractions will test whether you have really mastered the methods of factorising.

Geometry.

Take Christian and Pratt, pp. 147–187.

Elementary Science.

Prepare the sections on Heat and Light.

Few things are more commonly confused than heat and temperature. Heat is a form of energy possessed by bodies in virtue of a rapid vibratory motion of their particles. The total amount of this energy will therefore depend on the number of the particles as well as on the amount of motion of each. The temperature of a body, on the other hand, is that property of a body in virtue of which it gives heat to other bodies, or receives heat from them. The body which parts with its heat to the other body is said to be at the higher temperature. The student should work several experiments with the aid of a thermometer in order to realise thoroughly the difference between heat and temperature.

1. Fill a large kettle and a small one with water, and set them on the fire to boil. The large kettle takes longer, and evidently receives more *heat* than the small one, but yet their *temperature* is the same.

2. Take two basins, one containing one quart of water and the other two; let them both be at the same temperature, say 60°. Add a half-pint of boiling water to each, and the temperature of the smaller quantity will be found to be higher than that of the larger, although the same quantity of heat has been added in both cases.

3. Note that you cannot add two temperatures together. A quart of water at 150° contains a certain amount of heat, and another quart at 150° evidently contains the same, and if the two are poured together the half-gallon produced will contain twice as much heat as one of the quarts, but the thermometer still shows 150°, for the tendency of the water to part with its heat is not increased by mixing them.

We can never then say that one body is "twice as hot" as another, or that its temperature is "twice as high." A body whose temperature is 100° F. is not "twice as hot" as one whose temperature is 50° F. This is evident when we measure their temperatures with a Centigrade thermometer, for we shall find them to be 37⅞° C. and 10° C. respectively, while with a Reaumur thermometer the temperatures would be found to be 30⅛° and 8° respectively.

SCHOOL OF ART WOOD-CARVING.

THE School of Art Wood-carving, South Kensington, which now occupies rooms on the top floor of the new building of the Royal School of Art Needlework in Exhibition Road, has been re-opened after the usual summer vacation, and we are requested to state that some of the free studentships maintained by means of funds granted to the school by the London County Council are vacant. The day classes of the school are held from 10 to 1 and 2 to 5 on five days of the week, and from 10 to 1 on Saturdays. The evening class meets on three evenings a week, and on Saturday afternoons. Forms of application for the free studentships, and any further particulars relating to the school, may be obtained from the manager.

THE Marquis of Londonderry, K.G., President of the Board of Education, has appointed Mr. S. Herbert Cox to the Professorship of Mining at the Royal School of Mines, South Kensington, vacant on the death of Sir Clement le Neve Foster. In view of the changes in organisation that may be found desirable in the Royal College of Science and the Royal School of Mines after the completion of the investigations now in progress by the Departmental Committee, it has been thought best to make this appointment a temporary one.

Mr. Cox is an Associate of the Royal School of Mines. After experience as Assistant Geologist and Inspector of Mines in New Zealand, he was appointed Instructor in Geology, Mineralogy, and Mines in Sydney Technical College; concurrently with his tenure of this office he was employed to give technical lectures at various mining camps in New South Wales, and practised as a mining engineer. Since 1890 he has been entirely engaged in private practice, and has had experience of mining in England, France, Spain, Egypt, the United States and Canada. Mr. Cox was President of the Institution of Mining and Metallurgy in 1899–1900.

Opening of Aldwych and Kingsway.—When His Majesty the King opened these two important thoroughfares on October 18th the London County Council, mindful of the fact that it is now the educational authority, most considerately arranged that some children from every school in London should have an opportunity of seeing the King, and places were reserved for 12,000 children along Kingsway.

Naturally enough preference was shown to those pupils who by their industry had gained scholarships; but all grades of schools were represented, from the Pupil-teacher Centres down to the Schools for Crippled Children; the children from the latter were brought in their special carriages and provided with a special stand. Teachers and children alike are thankful to the Council for the great consideration shown, and to the permanent officials for the excellent way in which everything was arranged. By the kindness of Mr. E. A. Cornwall, each pupil was presented with a medal as a souvenir of the occasion.

Blackie's LIST

FACTS FOR PROGRESSIVE TEACHERS

Teachers interested in the application of the most modern educational ideas to School Books should consult Messrs. Blackie & Son's Catalogues.

For the New Code requirements the following Series are Specially recommended:—

ENGLISH.
The Model Readers.
The Palmerston Readers.
Blackie's Continuous Readers.
Blackie's English Texts.

HANDWRITING.
Vere Foster's Medium Series.

ARITHMETIC.
Blackie's Model Arithmetics for Course B. (Three Terms: Large Script Figures).
Course B. Arithmetics; Tests; Problems.
Martin's Mensuration.

DRAWING.
Vinal's Free Arm and Industrial Drawing.
Nicol's Brush Drawing Series.

GEOGRAPHY.
The New Century Geography Readers.
The Illustrated Continental Geo. Readers.
Frew's Object Lessons (for Teachers).

HISTORY.
Complete History Readers (Concentric).
Warwick History Readers (Periodic).

THE NEW CODE: "*Instruction should be given in the Elementary Rules of personal health in respect of food, drink, cleanliness, and fresh air.*"

The Laws of Health.

The New Code has been anticipated in respect of the above requirement by the issue of BLACKIE'S "LESSONS ON LIVING" (**1s. 6d.**), a reading book for Standards V., VI., VII. In a succession of most interesting and attractive lessons the book deals with the elementary rules of personal health in respect of food, drink, cleanliness, and fresh air. Physiology and kindred subjects are also introduced, and talks upon such subjects as the "framework" and the "covering" of the body, the heart and the circulation, digestion and food, breathing and the air, the brain and the nervous system, are dealt with, and the laws of health set forth in a way likely to imprint them in the memory. The book is proving exceedingly popular in schools, and will be found of great use wherever the subject of Hygiene, &c., is taken up. A corresponding Handbook for Teachers is published, price **6d.** Adopted by L.C.C.

THE NEW CODE: *Observation Lessons and Nature Study, &c., &c.*

Nature Study.

An admirable course of lessons in this interesting subject will be found in BLACKIE'S NEWTON NATURE READERS. The lessons are simple, and free from technical language, and the elementary truths of natural and physical science are presented in a new and attractive manner. There is an Infants' Reader, and there are six books for the Standards.

For the *teacher*, Prof. Scott Elliot's "Nature Studies" (Plant Life), **3s. 6d.**, will well repay perusal. A recent review concludes with the happy expression, "It seems to give me new eyes."

Full particulars of the Readers' and Teachers' Handbook may be had on application.

BLACKIE & SON, Ltd., 50 Old Bailey, LONDON.

BACON'S

Excelsior Wall Atlases

These UNRIVALLED WALL ATLASES provide the whole of the Maps and Diagrams necessary for Class Instruction in any scheme of Geography. They are widely used and universally approved. The series of maps used for these Atlases are the following:—Bacon's well-known "Bold-Feature" Maps; Bacon's New Special Maps; The Reduced Excelsior Maps; and Bacon's Astronomical Diagrams.

"Bacon's are beautifully clear and distinct."
School World, Sep. 1903.

Fourteen parts are always kept made up, but teachers may make their own choice from a series of sixty. Any number (of four or upwards) will be bound on one roller in a specially designed cover, each map being mounted on cloth and having metal binding to prevent curling up, at 3s. 6d. per map.

***The Fourteen Parts are:*—I. Plans, &c. II. Geographical Definitions. III. England. IIIa. Scotland. IIIb. Ireland. IV. British Isles, &c. V. Europe. VI. British Colonies. VII. United States. VIII. Scripture Geography. IX. Asia. X. Africa. XI. America. XII. The World.**

Upper Class Atlases

FOURPENCE EACH NET. STIFF COVERS.

Each of these Atlases contains Fourteen Maps, one or more of which are fully coloured, the rest being Bacon's Excelsior Memory Maps, with suitable Text opposite each Map. One book thus serves the place of two. Should be supplied to every scholar from Standard III. upwards.

While of the utmost value in every school, they are especially suitable for use with

BACON'S WALL ATLASES,

both the Teacher and the Scholar having a similar Map before them during the lesson.

***Ready*—IV. British Isles. V. Europe. VI. British Colonies.**
Others in preparation.

ALL EQUALLY FULL AND SERVICEABLE.

Teachers say this week:
"Just the thing I require." "Splendid." "I like them *very* much."

A single copy sent free to any teacher of Geography.

G. W. BACON & CO., Limited, 127 Strand.

GIBSON'S

PROGRESSIVE ARITHMETIC.

Book I., 2d.; II., 2d.; III., 2d.; IV., 3d.; V., 4d.

1. Exercises, numerous and varied—
Each book contains a full year's work. In no class and at no stage is the pupil required to work for days or weeks in the one groove. There is variety to add interest and make the Arithmetic lesson, under the guidance of the teacher, alive.

2. Constant Revision—
In nearly every exercise there is included material for revision, thus making sure that no previous instruction has been forgotten.

3. Concrete and Abstract Examples—
Concrete examples are introduced at the earliest stage and continued throughout the series, but abstract examples are numerous and judiciously intermingled, so as to secure sufficient practice in the manipulation of figures.

4. Mental Arithmetic—
Types and suggestions of a practical nature, suitable to the stage arrived at by the pupil, have been placed at the end of each book.

5. Arrangement—
Each page has at the head the new matter introduced into the exercises on that page. The pupil, therefore, has before his eyes the information required in the working of the new problems. The language throughout is simple.

ROBT. GIBSON & SONS (Glasgow), LTD.,
45 QUEEN STREET.

OUR SCIENCE SECTION

☞ **Subscribers requiring Explanations of Difficulties in any branch of Science, or Advice upon Courses of Study, can obtain all help required by communicating with the Editor, and accompanying their query with the Coupon cut from this number.**

CHEMISTRY.

(ADVANCED AND HONOURS.)

BY C. A. WEST, B.SC., A.R.C.S., F.I.C.

HAVING arrived at an explanation of the gas laws by means of the Kinetic Theory of gases, we will now turn our attention to the consideration of solutions.

In the case of a gas the molecules are on the whole at some considerable distance apart, or in other words they do not fill the space which we speak of as the volume of the gas. In comparison with the volume of the gas, the space absolutely filled by the molecules is very small indeed under ordinary conditions. When we vaporise a liquid, the space occupied by the substance is very much increased indeed. For example, in the case of the conversion of water at 100° C. into steam at the same temperature and under normal pressure, the increase is about seventeen hundred times the original volume of the water. In the liquid state, then, the molecules are comparatively close together.

If, however, we dissolve a small quantity of a substance (say cane sugar) in a large quantity of a liquid (say water), we are able to distribute the molecules of the sugar through a comparatively large space, so that the number of molecules per cubic centimetre (or the concentration of the solution) is comparable with the number of molecules per cubic centimetre in the case of a substance in the gaseous state.

If the solvent has no influence on the motion of the molecules of the dissolved substance beyond that due to the obstruction which it causes, we should expect that the motions of the molecules of the dissolved substance would be very similar to the motions of the molecules of a gas, and that in fact the dissolved substance would obey laws similar to the gas laws as regards changes produced by changes of temperature, volume, and pressure.

Questions now arise as to what we are to take as the temperature, volume, and pressure of a dissolved substance. Obviously the temperature of a dissolved substance must be the same as the temperature of the solvent. By the volume in the case of a gas we mean the whole space occupied by the gas, which corresponds with the internal volume of the containing vessel. In the case of a dissolved substance we must for our analogy regard the volume of the solution as being also the volume occupied by the dissolved substance, as the latter is distributed uniformly throughout the whole space occupied by the solution.

When we come to consider the pressure, it is not at first sight so easy to see how to distinguish this quantity. In the case of a gas we can measure the pressure directly, and we regard the pressure as being due to the bombardment of the walls of the vessel by the moving molecules of the substance. Now there is no obvious method by means of which we can measure the pressure due to the dissolved substance in this sense, but the molecules of the dissolved substance do produce an effect somewhat analogous to gaseous pressure. This is known as the *osmotic pressure* of the dissolved substance. To help us to grasp the idea underlying the measurement of osmotic pressure, let us consider the case of the passage of hydrogen gas through palladium. At ordinary temperatures palladium absorbs hydrogen, but gives it out again if heated in a vacuum to temperatures above 100° C., but it behaves in this way with no other gas but hydrogen. Hence at a higher temperature a sheet of palladium can be used as a diaphragm through which hydrogen but no other gas can pass. If, then, we enclose another gas such as nitrogen in a tube of palladium at a temperature of about 200° C. and immerse it in an atmosphere of hydrogen, we should expect that hydrogen would pass into the interior of the tube until the pressure due to the hydrogen inside would become equal to the pressure outside, so that the internal pressure would be increased until it was equal to the sum of the original pressure of the nitrogen in the tube and the pressure of the hydrogen outside. An experiment on these lines has been carried out, and the increase has been found to be over ninety per cent. of the increase expected. These experiments show the possibility of measuring the pressure due to one gas when mixed with others.

In the case of a solution it is possible to perform a somewhat analogous experiment. Taking the case of sugar dissolved in water, we can make a membrane such that it will allow water to pass through freely, but not the sugar.

Moritz Traube was one of the first to propose the making of such membranes in the following way: Take a piece of glass tube about six inches in length and close one end by means of a piece of rubber tubing and a clip. The open end of the tube is now placed under the surface of a 2·8 per cent. solution of copper acetate, and the rubber tube pressed a little below the clip. This causes a few bubbles of air to be expelled, and on releasing the rubber a few drops of the acetate solution are sucked up into the glass tube.

Now lower the tube into a 2·4 per cent. solution of potassium ferrocyanide. By moving the rubber tube cause the acetate solution to just come to the mouth of the tube, so that it forms a plane in that position. A thin transparent film of copper ferrocyanide is formed where the two liquids meet. The two liquids do not diffuse any further into each other, as the film does not seem to thicken, and the liquids remain clear. Films such as these, however, are capable of standing only very small differences of pressure on the two sides.

Pfeffer, the great botanist, assisted greatly in the investigation of these phenomena by showing how to form films capable of resisting considerable pressures. He took a vessel of porous earthenware and placed one of the solutions inside and the other outside. The two liquids gradually soaked into the earthenware and met in the pores of thin material, forming the films across them. These films were no doubt of exactly the same nature as those described above, but they were supported by the earthenware, and were consequently able to withstand much higher pressures. Very great care must be taken in the making of these *semipermeable membranes*, as they are called, otherwise they are very defective and easily broken. For ordinary work the membrane may be made in the following way: Take a bulb of porous earthenware provided with a neck fitted with a rubber stopper. (The porous bulbs used for showing diffusion of gases serve very well.) Wash it well and then soak it for a day in running water. Dry the neck of the bulb and coat it inside and outside as far as the bulb with paraffin wax. Allow it to cool and the wax to solidify. Make up a solution of copper sulphate in water, using 2·5 grams per litre and pour enough of this into the bulb to fill it beyond the commencement of the wax on the neck. Now insert a rubber stopper with a long narrow-bore tube passing through it in the neck. Place the bulb in a beaker, and pour into the beaker sufficient potassium ferrocyanide solution (2·1 grams per litre) to cover the bulb up to the neck. Allow it to stand for about three hours, then empty the bulb and rinse it well inside and outside with water.

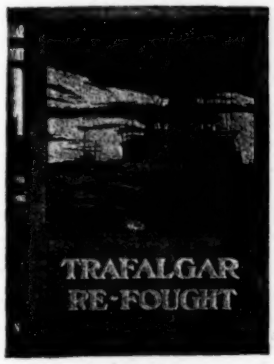
Having thus prepared the cell, pour into it a strong solution of cane sugar and replace the stopper and tube. Now place the bulb in a beaker of distilled water. Water will gradually pass into the bulb from the outside, and the level of the liquid in the glass tube will slowly rise. It is probable that water also passes out from the bulb, but more passes in than passes out, and the pressure inside gradually increases, as shown by the rise of the liquid in the glass tube passing through the stopper. The water,

THOMAS NELSON & SONS'

NEW PRIZE BOOKS

With Coloured Illustrations

The HEAD TEACHER says: The Prize and Gift Books of this (T. Nelson & Sons) firm are deservedly popular. The ***Writers*** by experience can be depended upon to arouse the keenest interest in their works, and the ***Public*** can be sure that ***sound and wholesome reading*** will be found in them. Needless to say, the ***Printing, Binding, and Illustrations*** are all that can be desired.



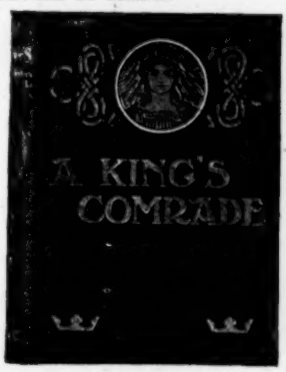
Cover Design

6/- By SIR W. LAIRD CLOWES and ALLAN H. BURGOYNE. **6/-**

A New Book about the Navy. Coloured Plates and other Illustrations.

Trafalgar Re-Fought

A splendid book for lads, who will find in it a fund of thrilling excitement, whilst gaining much information about the Navy. All the knowledge of a great naval expert has been concentrated on the effort to depict a magnificent sea-fight fought under steam, and with the tremendous weapons and murderous possibilities of to-day.



Cover Design

At 5/-

EVELYN EVERETT-GREEN'S New Volume.

SMOULDERING FIRES.
This, the sixteenth annual addition to a long list of charming romances of history, is a tale of the terrible catastrophe at Martinique, which became historical so recently as 1902. Six Coloured Illustrations by E. SHEPARD.

New Story by E. L. HAVERFIELD.

THE GHOST OF EXLEA PRIORY.
A capital story, telling of the trials and troubles of a little girl at school, the tradition of the Priory "ghost" adding a touch of romance and leading to a pleasant *dénouement*. Six Coloured Illustrations by Miss N. TENISON.

A New and Captivating Historical Romance by C. W. WHISTLER.

A KING'S COMRADE.
The author's talent for making events of long past history live again is brought to bear on this story with the usual happy results. Six Coloured Illustrations by A. F. SKINNER.

By GERALDINE MOCKLER.

THE HEIRESS OF AYLEWOOD.
A story that will captivate girls. Six Coloured Illustrations by Miss N. TENISON.

At 3/6

By ELIZA F. POLLARD.

SOLDIERS OF THE CROSS.
The brilliant colours of Spanish life in the picturesque days of Ferdinand and Isabella form the background to an enthralling story of adventures with the warlike Moors. Four Coloured Illustrations.

At 3/6

A New Historical Tale by EVELYN EVERETT-GREEN.

IN NORTHERN SEAS.
Four Coloured Illustrations.

By EDWARD STEP.

A NATURALIST'S HOLIDAY.
A thoroughly interesting and instructive description of animal life in the sea and on the rocks. Profusely Illustrated.

At 2/6

By TOM BEVAN.

RED DICKON, THE OUTLAW.
A title that will whet the imagination of a boy, and lead him to expect a thrilling tale of "red rebellion," outlawry, and wild adventure, in none of which particulars Mr. Bevan's story will disappoint him. Two Coloured Illustrations by WALTER GRIEVE.

By M. KIRLEW.

FAMOUS SISTERS OF GREAT MEN.
Henrietta Renan, Dorothy Wordsworth, Mary Lamb, and Fanny Mendelssohn.

At 1/6

By H. ROBERTON.

JOHN KNOX'S BAIRNS.
A most seasonable reward book for this the year of the Great Reformer's quatercentenary. Two Coloured Illustrations by WALTER GRIEVE.

Cover Design

At 1/-

By EVELYN EVERETT-GREEN.

UNCLE BOO.
Miss Green has produced a most charming tale of child-life. Two Coloured Illustrations.

By HAROLD AVERY.

UNDER PADLOCK AND SEAL.
Two Coloured Plates and Illustrations in black and white.

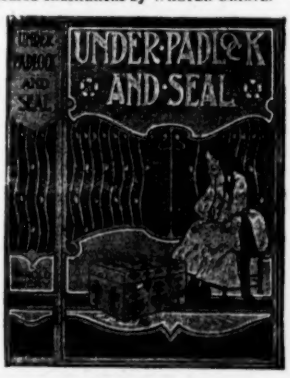
Brighter than ever. Beautiful Coloured Cover.

THE CHILDREN'S TREASURY.
This well-known Annual forms a treasure-house of miscellaneous reading for children, with abundance of pictures.

At 9d.

By JANE H. FINDLATER.

ALL THAT HAPPENED IN A WEEK.
Two Coloured Illustrations.



Cover Design

*** ***Write for Illustrated Catalogue, post free on application.***

T. NELSON & SONS, 35 & 33 Paternoster Row, London, E.C.; Edinburgh, Dublin, and New York.

in passing through the narrow pores of the earthenware, no doubt experiences a great deal of resistance, and this accounts for the slowness of the rise of the liquid in the tube. A rise of a few inches per hour is usually noticed, and this continues for many hours until the liquid has risen eight or nine feet in the tube, and then the membrane usually breaks down. Pfeffer has shown that with a good membrane the slow rise continues until a maximum is reached, and then the pressure remains steady. *This maximum pressure he called the osmotic pressure*, and he showed that the magnitude of the osmotic pressure depends on the dissolved substance.

That the osmotic pressures are very considerable is shown by the following figures for one per cent. solutions of various substances, where the pressures are given in millimetres of mercury :—

Potassium sulphate . .	193 mm.
Potassium nitrate . .	178 ,,
Cane sugar	47·1 ,,
Dextrine	16·6 ,,

It was found by Pfeffer that in the case of any one substance the osmotic pressure was proportional to the concentration of the solution, that is, it was proportional to the number of molecules per cubic centimetre of the solution, just as, according to Boyle's Law, in the case of a gas the pressure is proportional to the number of molecules per cubic centimetre, that is, proportional to the density of the gas, or, what is the same thing, inversely proportional to the volume.

The following are some of Pfeffer's figures, from which the student may see for himself the character of the evidence in favour of the above statement with regard to the proportionality between concentration and osmotic pressure. The figures apply to a solution of cane sugar :—

Percentage Concentration.	Osmotic Pressure.	Ratio.
1	53·5	53·5
2	101·6	50·8
2·74	151·8	55·4
4	208·2	52·1
6	307·5	51·3

The great difficulty in the way of making measurements of osmotic pressure is the difficulty of obtaining a membrane which is semipermeable, and which will at the same time stand the great pressures. The pressure obviously need not be measured by long columns of mercury or water, but can be registered by a manometer.

We have now seen that the particles of a dissolved substance exert a considerable pressure on the pure solvent, and this pressure tends to drive the particles into the solvent. Now since the pressure is proportional to the concentration, it will be evident that in the case of two solutions of different concentrations being brought into contact, diffusion will take place until the concentration is the same throughout. The diffusion, however, in many cases is comparatively slow, but we can understand the reason for this when we consider the very small size of the molecules and the resistance offered to their motion by the water or other solvent.

If we drop a gold coin into water it sinks at once, but if we liberate gold in a very fine state of division from a solution of one of its salts in water, it may be so finely divided that it will remain in suspension for years, although the force acting on it tending to make it move downwards through the liquid is the same, mass for mass, as in the case of the coin. In the same way it is probable that in the case of the diffusion of salts in solution the slowness with which diffusion takes place, in spite of the large osmotic pressure at work, is due to the state of minute division of the dissolved substance.

PHYSIOGRAPHY.

(STAGES 2 AND 3.)

THE THERMOMETER (*Continued*).

So far we have considered only thermometers depending for their action on the relative expansions of a glass tube and an enclosed liquid, and we have learned that these can only be used within comparatively small temperature limits corresponding roughly to the freezing and boiling points of the liquid used.

Many methods have been used for measuring temperatures beyond these limits, and several of these have been successful to a very satisfactory degree. Two of these methods are electrical, and we shall deal with them next.

To enable us to grasp the principles underlying the electrical methods, it will first be necessary for us to get some idea of the conditions of the flow of an electric current through a circuit.

If we take a compass needle on its pivot and place above or below it a copper wire no effect is produced on the needle, but if we now join the ends of the wire to the terminals of a voltaic battery and again hold it over the needle, we see at once that the needle is deflected. If we hold the wire below the needle, the latter is deflected in the opposite direction to that in which it was first deflected. If we now keep the wire in the same direction as at first, but connect its ends to the terminals of the battery so that the end which was connected to the positive pole is now connected to the negative pole, we find that we get deflections in directions exactly opposite to those obtained above. We thus see that an electric current flowing through a wire in the neighbourhood of a magnetic needle may deflect the latter, and the direction of the deflection depends on the direction of the current and on the position of the wire relative to the needle. It will be obvious that if we keep the positions of the needle and wire fixed, the direction of the deflection will depend only on the direction of the current.

This is the principle employed in many galvanometers or instruments used for the detection and measurements of electric currents. If we use two equal and similar needles attached together by a suitable wire support, so that the two needles are parallel to each other, but the north pole of one over the north pole of the other, the combination is spoken of as an astatic needle because it will set in any direction, the magnetism of the earth having no effect on it. If we suspend such a needle from a needle point, and then employ a current to deflect it, we find that it is exceedingly sensitive. A so-called astatic needle is never truly astatic, one of the needles always being slightly different from the other, so that the earth exerts a very small resultant directive force on the combination. However, since the controlling action of the earth is so small, a small force is all that is necessary to produce a considerable deflection. If we wind a coil of wire on a frame so that the lower of the two needles can hang within it, we obtain a galvanometer of great sensitiveness. Such an astatic galvanometer is shown in Fig. 1.

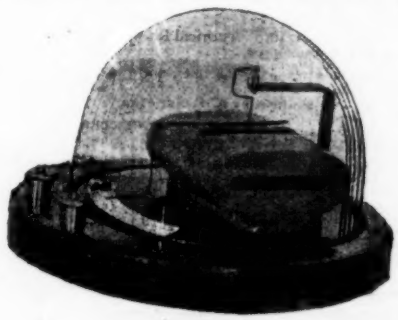


FIG. 1.

An astatic galvanometer is generally used in connection with other apparatus for measuring electrical resistances.

Suppose we connect a wire to the two terminals of a battery of voltaic cells, an electric current flows through it and we say that the electrical pressure or potential must be different at the two ends of the wire, otherwise the current would not flow. A model designed for teaching purposes is shown in Fig. 2. This model works with water which flows through a set of pipes and illustrates a current of electricity flowing through wires. The pipes are mounted horizontally on a wooden base, and at numerous points along them glass gauge-tubes Q, P, S, U, V, W, X, Y, and Z are attached. A small electric motor M drives a centrifugal pump H by means of a gut band which can be adjusted by a tension pulley T. The pump H takes coloured water from the glass dish N, and pumps it through the horizontal pipes on the board and delivers it from the outlet C back into the dish, so that the same water flows round and round the circuit. The glass gauge-pipes register the pressures at different points, and it can be seen that there is a gradual fall in pressure from the first gauge P to the last one Z. At the foot of the

Messrs. DEAN & SON

Will be happy to send to all lovers of Belles-Lettres a Catalogue of some 600 Volumes of Poets, Classics, and Standard Sets suitable for School Prizes and for the Library.

The Leather Bindings of many of the Series are a special feature, and all of them are both beautiful and unique. The New Bindings in Ooze Calf, Burnt Leather, with Hand-painted Decorations, are specially dainty.

The Gegovia Classics. Burnt Leather. 19 Titles. 6s. net.

JUST READY.

HANDY DICTIONARY OF PROSE QUOTATIONS. Compiled by GEORGE W. POWERS. Fully indexed under author, general topic, and particular subject. An indispensable work of reference both to men of letters and to the general reader. Beautifully printed on excellent paper, tinted top, scarlet cloth extra, with frontispiece in half-tone, 364 pp., 1s. 6d. net; limp leather, 2s. 6d. net.

Extract from the Preface.—"The selections cover a wide range, from the precepts of the Chinese philosopher Confucius to the latest utterances of Senator Hoar and Prince Von Bismarck. The extracts number 2138, and are chosen from the writings of 368 authors."

UNIFORM WITH THE ABOVE.

HANDY DICTIONARY OF POETICAL QUOTATIONS. Compiled by GEORGE W. POWERS. Fully indexed under author, general topic, and particular subject. Uniform with "Prose Quotations." 370 pp., 1s. 6d. net; limp leather, 2s. 6d. net.

Extract from the Preface.—"The topics illustrated number 2138, selected from the writings of 255 authors."

In One Volume, complete, nearly 1550 pp.

THE RISE OF THE DUTCH REPUBLIC. By JOHN LOTHROP MOTLEY. Popular Edition, with Introduction by JOHN FRANKLIN JAMESON, Professor of History in Chicago University, and complete Index. With Four Portraits. Printed in a large clear type, strongly bound in cloth, 3s. net.

Athenæum.—"Compresses by means of thin paper the whole work into one volume, and includes four portraits, and an appreciative note on Motley by Professor J. F. Jameson, of Chicago University. With these advantages (and the index) the edition is likely to be popular with students."

Glasgow Herald.—"The volume, while adequately bound, is especially noteworthy for its large, clear typography."

T. P.'s Weekly.—"A particularly good one-volume edition."

Scotsman.—"Messrs. Dean & Son have done no small service to students and general readers by bringing out an edition of the book complete in one volume at 3s. net. The volume is not too unwieldy for easily handling, and is well printed and bound."

A MARVEL OF CHEAPNESS.

A DICTIONARY OF QUOTATIONS IN PROSE. By ANNA L. WARD. Fully indexed under author, general topic, and particular subject. An indispensable work of reference both to men of letters and to the general reader. 701 pp. New Edition, strongly bound in cloth, 2s. 6d. net.

Athenæum.—"Deserves praise. . . . Much good thought enshrined from sources less familiar than the trite authors of wit and wisdom."

Scotsman.—"Comprehensive, well indexed, and convenient in shape as it is, the book will form a helpful adjunct to the libraries of reading men."

NEW LISTS POST FREE.

LONDON: DEAN & SON, Ltd., 160a FLEET STREET, E.C.

Messrs. T. C. & E. C. Jack's "Unique" School Books

Editor—T. CARTWRIGHT, B.A., B.Sc.

In strict accordance with both Code and "Suggestions."

Literary Readers for Infants.
LEARNING TO READ.
Step One, 3d.; Two, 4d.; Three, 6d.; Four, 6d.

For Older Scholars.
THE "JACK" READERS.
Book I., 8d.; II., 10d.; III., 1s.; IV., 1s. 4d.; V., 1s. 6d.

Supplementary Readers.

The Children's Scott	1s. 3d.
The Children's Pickwick	1s. 3d.
Captain Cook's Voyages	1s. 3d.
Why Boys should not Smoke	6d.
The Children's Fairy Book	6d.
Lamb's Tales (1st and 2nd Series)	6d.
The Children's Fairy Book	6d.
Book of Notable Days	8d.
Rip Van Winkle	3d.
Rab and his Friends	3d.
Writing for Reading	6d.
Commercial Reader	8d.
Annals of the Cymry	8d.

Periodic Histories.

Book I. B.C. 55–A.D. 1066	1s. 0d.
" II. 1066–1485	1s. 3d.
" III. 1485–1603	1s. 6d.
" IV. 1603–1714	1s. 6d.
" V. 1714 to Present Time	1s. 8d.

Concentric Histories.

Step I. Simple Tales Simply Told	1s. 0d.
" II. British History Simply Told	1s. 3d.
" III. British History as Cause and Effect	1s. 6d.
" IV. The Making of Britain	1s. 6d.
" V. History of Europe	1s. 8d.

Three Term Arithmetic with Practical Work.

The "Round the World" Geographical Readers.

Tales of Travel	10d.
Land and Water	1s. 0d.
Our English Home	1s. 3d.
The British Isles	1s. 4d.
Our Colonial Cousins	1s. 6d.
The Five Continents, each	1s. 6d.
The World	1s. 8d.

Class-Work in English.
Books I.–III., 3d.; IV., V., 3d.; VI., VII., 4d.

"Three-Term" Arithmetic. (Scheme B.)
Book I., 2d.; II.–V., 3d.; VI., 4d.; VII., 5d. (cloth, 1d. extra).
Answers, 6d.

"Three-Term" Algebra.
Books I. and II., 4d.; III., 6d.
Answers, 6d.

Intermediate Arithmetic 10d.
Graphs of Algebraical Functions 8d.

Nature Study.
Books I. and II., 6d.; III.–VI., 8d.

French by the Direct Method.
Book I., 1s. 6d.; II. and III., 1s. 8d.; IV., 2s. 6d.

Livre de Lecture 1s. 8d.
Grammaire française en français 8d.

34 Henrietta Street, London, W.C., and Edinburgh.

TEACH SHORTHAND!

At every up-to-date School this subject is taught nowadays.

GREGG SHORTHAND
(The Popular American System)

Is rapidly becoming universally adopted by Teachers everywhere. It is easier to learn and less complicated than other systems, hence its popularity.

GREGG SHORTHAND
Is THE system of Shorthand to learn and teach.

PRICE OF MANUALS: PART I. "The Elements," **1s. 1d.**; PART II. "Reporting Style," **2s. 1d.** (Or Bound Manual Complete, **3s. 2d.**) *Special terms to Teachers.*

Send stamp for particulars to - -
THE GREGG PUBLISHING COMPANY
STRATFORD-UPON-AVON.

THE SCHOOLMISTRESS

WEEKLY PRICE ONE PENNY. CONTAINS HELPFUL ARTICLES ON ALL BRANCHES OF SCHOOL WORK. WEEKLY PRICE ONE PENNY.

TEACHERS not already Subscribers should order from their Newsagent, or forward Postal Order or Halfpenny Stamps to
HOWARTH BARNES, 149 Fleet Street, London, E.C.

SUBSCRIPTIONS (Prepaid).
ONE SHILLING AND NINEPENCE for THREE MONTHS.
THREE SHILLINGS AND THREEPENCE for SIX MONTHS.
SIX SHILLINGS for TWELVE MONTHS.
— Post Free. —

The Best Paper for Pupil Teachers and all Mistresses.
Full Notes on Certificate Literature.

TELEGRAPHIC ADDRESS: "SCHOOLMISTRESS, LONDON."

Address:
HOWARTH BARNES,
149 Fleet Street, LONDON, E.C.

gauge-pipe Q the pipe from the pump branches into two of different diameters. These meet again at the foot of the gauge Z.

Consider the uniform pipe with the gauges Q, S, V, X, Z. This is divided into four equal portions, and the gauges show that in each portion the drop in pressure is the same. This illustrates the fact that in any single wire of uniform section the drop in electrical pressure or potential is proportional to the length or

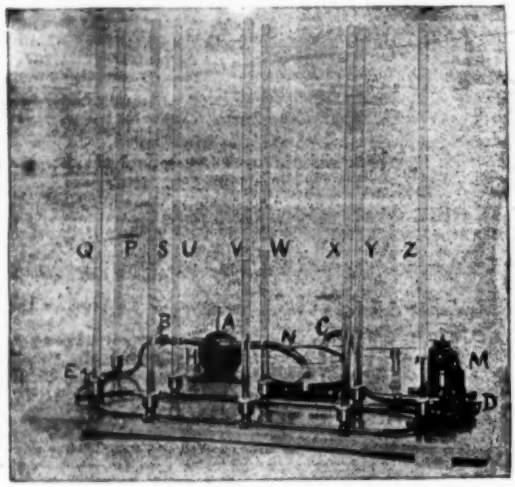


FIG. 2.

resistance. The same applies to the horizontal pipe connected with the gauges Q, U, W, Y, Z. The pressure is the same at Q and Z for both pipes. The total fall in *pressure* is therefore the same in each, although more water flows through the wider tube, or the one with the less resistance.

Half-way along the wide pipe the pressure is the same as at a point half-way along the narrow pipe, and if we were to join these two points by another pipe no water would flow through the latter, as the pressure would be the same at each end.

In the case of the measurement of electrical resistances we make use of a similar arrangement, named the Wheatstone Bridge after its inventor, Wheatstone.

In this arrangement, represented in Fig. 3, two circuits are arranged in the same way as the pipes in the model described.

The current enters at A and splits into two portions which go along the paths ABC and ADC respectively, and recombine at C. The potential fall down ABC is the same as that down ADC, for they have the same potential to start with and the same to end with. Now, if the resistance K in the branch AD equals the resistance U in the branch DC, the potential of D will be midway between the potentials of A and C. If ABC is a uniform wire, the middle point of it will have the same potential as the point D, and if we connected these points to a galvanometer we should get no deflection. If the resistance K does not equal U, there will still be *some* point on ABC where the potential is the same as that of D. By connecting one terminal of the galvanometer to D, and moving a wire attached to the other terminal along the wire ABC, we can find a point

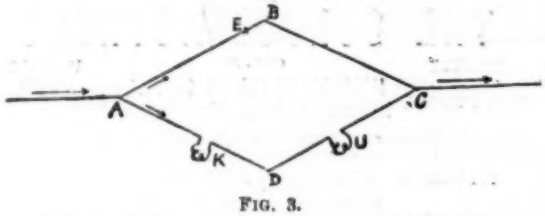


FIG. 3.

which gives no deflection, that is, a point with the same potential as D.

Let E be such a point, then we know that the fall in potential in AD is equal to the fall in potential in AE, and the fall in DC equal to the fall in EC, or

$$\frac{\text{Fall in K}}{\text{Fall in U}} = \frac{\text{Fall in AE}}{\text{Fall in EC}}.$$

Now since ABC is a uniform wire,

$$\frac{\text{Fall in AE}}{\text{Fall in EC}} = \frac{\text{Length AE}}{\text{Length EC}}.$$

Again, since the falls in the same wire are proportional to the resistances, we have

$$\frac{\text{Fall in AD}}{\text{Fall in DC}} = \frac{\text{Resistance K}}{\text{Resistance U}},$$

and hence

$$\frac{\text{Resistance K}}{\text{Resistance U}} = \frac{\text{Length AE}}{\text{Length EC}}.$$

Now AE and EC can easily be measured, and if either K or U is known, the other can easily be calculated. Hence by this method we can, by employing a wire of known resistance, easily determine the resistance of another wire.

In the case of a platinum wire the resistance varies regularly with the temperature. Taking advantage of this fact, platinum thermometers have been devised which are used in connection with a Wheatstone Bridge. These we shall deal with next month.

MATHEMATICS.

(STAGES 2 AND 3.)

BY FRANK CASTLE, M.I.M.E.,

Royal College of Science; Lecturer on Mathematics, etc., Morley College; Author of "Elementary Practical Physics," "Practical Mathematics," etc.

Ex. 8. Find the coefficient of x in the quotient when

$$x^5+p_1x^5+p_2x^4+p_3x^3+p_4x^2+p_5x+p_6$$

is divided by $x-a$. (1904)

Ans. Coefficient of x is $a^4+p_1a^3+p_2a^2+p_3a+p_4$.

Ex. 9. Extract the square root of

$$x^4-\frac{2}{3}x^3+\frac{19}{9}x^2-\frac{2}{3}x+1.$$

Ans. $3x^2-x+3$.

Ex. 10. (*a*) Extract the square root of

$$x^4-2x^3+4x+1-\frac{4}{x}+\frac{4}{x^2}.$$

(*b*) Find values of p and q for which

$$x^4-2px^3+19x^2-qx+25$$

is a perfect square. (1903)

Ans. (*a*) $x^2-1+\frac{2}{x}$; (*b*) $p=\pm3$. $q=\pm30$.

Ex. 11. Find the square root of $174-36\sqrt{6}$. (1904)

Ans. $\pm(9\sqrt{2}-2\sqrt{3})$.

Ex. 12. Extract the square root of $a^2+a\sqrt{(a^2-2)}-1$. (1902)

Ans. $\frac{a+\sqrt{a^2-2}}{\sqrt{2}}$.

Ex. 13. Reduce the following expressions to their simplest form:—

(*a*) $(a+b+c)^3-(b+c-a)^3-(c+a-b)^3-(a+b-c)^3$.

(*b*) $\frac{x^2-bc}{(a-b)(a-c)}+\frac{x^2-ca}{(b-c)(b-a)}+\frac{x^2-ab}{(c-a)(c-b)}$. (1902)

Ans. (*a*) $24abc$; (*b*) -1.

Ex. 14. Find the product of

$x^{\frac{1}{2}}+1+2x^{-\frac{1}{2}}$ and $x^{\frac{1}{2}}+2+3x^{-\frac{1}{2}}$. (St. 3, 1905)

Ans. $x+2x^{\frac{1}{2}}+4x^{\frac{1}{2}}+2+5x^{-\frac{1}{2}}+4x^{-\frac{3}{2}}+6x^{-1}$.

Ratio, Proportion, and Variation.—The various theorems connected with ratio, proportion, and variation usually admit of very easy proof and may be obtained from any text-book on the subject; it is only necessary here to indicate those which should receive especial attention. Thus the theorem that if $\frac{a}{b}=\frac{c}{d}$, then

THE

EDUCATIONAL MUSICAL INSTRUMENT CO.

(ESTABLISHED 1881.)

For Lists and Designs apply to the

MANAGER,

19 Highbury Place, London, N.
43 Estate Buildings, Huddersfield;
21 Argyle Crescent, Portobello, Edinburgh;
or 3 Unity Street, Bristol.

MANY THOUSANDS of Teachers, School Managers, &c., including **nearly Thirty of H.M. Inspectors of Schools,** are using and recommending our Instruments, of which we have specimens **in every County of the British Isles.**

SCHOOL PIANOS, &c., A SPECIALITY.

We have **over 1,800** in use, our large trade enabling us to offer unapproached bargains. You would also find our **Violin Outfits for Orchestral Classes** unequalled in quality and price.

See our **45 Guinea** Prize Medal Upright Iron Grand Piano for **£21 cash,** or thirty-six payments of 14s. 2d. per month. Quite new, rich, full tone, and thoroughly durable.

We pay carriage, give a month's free trial, a ten years' warranty, and **exchange free of cost** if the instrument sent is not all that is desired.

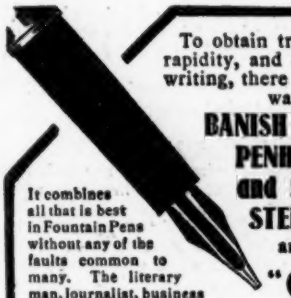
Dr. MACNAMARA, M.P., Editor of *The Schoolmaster*, writes:—"We are more than delighted with the Piano which you recently selected for and supplied to us. Any of my friends who need an instrument cannot possibly do better than place themselves entirely in your hands."

Mr. J. H. YOXALL, M.A., M.P., Gen. Sec. N.U.T., writes:—"For the fourth time I have experienced for myself, or for relatives, the special value, wide selection, and expert advice which your clients gain. Each of the four Pianos has given perfect satisfaction."

Show-rooms open daily. Write for our List of Instruments for Home or School Use, specifying the class preferred.

WE CAN SAVE YOU MANY POUNDS.

(Please mention this Paper.)



To obtain true comfort, rapidity, and economy in writing, there is only one way:

BANISH INKPOTS, PENHOLDERS, and SCRATCHY STEEL PENS,

and use a

"Swan" Fountain Pen

It combines all that is best in Fountain Pens without any of the faults common to many. The literary man, journalist, business man, or in fact anyone who uses a pen at all will find a "Swan" a necessity once they have tried it. Time and constant work effect no change. Any hand suited.

10/6, 16/6, 25/-

UPWARDS, POST FREE.

First and Best.

Sold by all Stationers and Jewellers.

Write for Catalogue, post free.

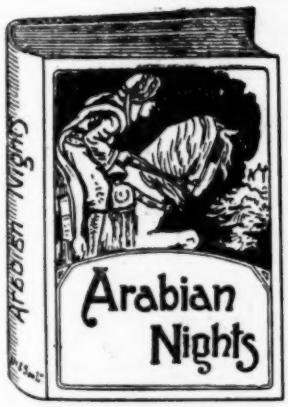
MABIE, TODD, & BARD,

79 & 80 High Holborn, London, w.c.

BRANCHES: 93, Cheapside, E.C.; 95a, Regent Street, W.; 3, Exchange Street, Manchester; and at New York and Paris.

DEAN'S BOOKS FOR SCHOOL PRIZES

Size, Imperial 16mo (or 5½ by 7½ inches), 2s. 6d.; or, with gilt edges, 3s. 6d.



THE ADVENTURES OF BARON MUNCHAUSEN. Edited by D. HAYMAN.

HAUFF'S FAIRY TALES. Edited by CECILY M'DONELL.

LEATHER STOCKINGS. By FENIMORE COOPER.

ROBINSON CRUSOE. By DANIEL DEFOE.

NOW-A-DAYS. Edited by Mrs. F. G. GREEN.

LONG, LONG AGO, OR NURSERY RHYMES RETOLD. Edited by M. WATERSON.

ARABIAN NIGHTS. Edited by Mrs. F. G. GREEN.

The above are handsomely bound in deeply embossed pictorial boards, and make most attractive volumes. Each book is profusely illustrated, containing numerous illustrations in black and white, besides coloured plates.

BIG ANIMAL PICTURE BOOK

Size, Crown Folio (or 12 by 16½ inches), 6s.

This is the largest and most magnificent juvenile work that has ever been offered to the public. Here the favourite domestic animals are pictured in heroic size, and great care has been taken in the colouring and printing. There are twelve full-colour pictures, and each picture has descriptive matter of the animal's habits, with original illustrations on the opposite page.

Bound in dark blue English vellum cloth. Cover design in inks and gold embossed. In a printed wrapper.

N.B.—An edition of this work is published in French at the same price, 6s., with the title:

LES ANIMAUX GRANDS AMIS DES PETITS ENFANTS.

DEAN'S SHILLING PLAYS FOR YOUNG ACTORS

In this well-known series of over twenty titles, many of which have been reprinted several times, an excellent subject can be found suitable for presentation at school entertainments.

The Publishers will be happy to forward a full list to all teachers.

LONDON: DEAN & SON, Ltd., 160a FLEET STREET, E.C.

$\frac{a+b}{a-b}=\frac{c+d}{c-d}$ is readily obtained. In *variation*, the statement that a varies as b is usually written as $a \propto b$; the sign of equality may be used by writing $a=kb$, where k is a constant, the numerical value of which may be obtained from simultaneous values of a and b.

Some of the methods which may be used with advantage may be seen from the following typical examples.

Ex. 1. Give a geometrical instance:—

(a) Of a quantity (y) that varies directly as another quantity (x); (b) of a quantity (y) that varies inversely as another quantity (x).

A quantity y consists of the sum of two parts, of which one varies directly as x and the other inversely as x. It is known that when $x=1$, $y=3$, and that when $x=\frac{1}{2}$, $y=4$; show that $x(3y-4x)=5$. (1901)

Let $y=m+n$.

Where $m \propto x$ and $n \propto \frac{1}{x}$

$\therefore m=ax$ and $n=\frac{b}{x}$ where a and b are constants

$\therefore \quad y=ax+\frac{b}{x}$. (1)

When $x=1$, $y=3$, and when $x=\frac{1}{2}$, $y=4$, hence, substituting these values in (1), we obtain

$3=a+b$. (2)

$4=\frac{1}{2}a+2b$. (3)

Multiply (2) by 2 and subtract (3) from it;

$\therefore a=\frac{4}{3}$.

Substituting this value in (2),

then $b=3-\frac{4}{3}=\frac{5}{3}$;

$\therefore \quad y=\frac{4}{3}x+\frac{5}{3x}$,

or $\quad x(3y-4x)=5$.

Ex. 2. (a) It is known that x varies directly as y and inversely as z; it is also known that x equals a, when $y=b$, and $z=c$; find an equation connecting x, y, z, and a, b, c.

(b) A certain quantity y equals the sum of two quantities one of which varies directly as x, and the other inversely as x; given that $y=2$ when $x=-1$, and that $y=4$ when $x=2$, find y in terms of x. (1902)

(a) $x \propto \frac{y}{z}$ $\qquad \therefore x=k\frac{y}{z}$

where k is a constant—

also $a=\frac{kb}{c}$

$\therefore \quad k=\frac{ac}{b}$. Substituting this value, we obtain

$x=\frac{ac}{b}\frac{y}{z}$;

or $\quad \frac{xz}{y}=\frac{ac}{b}$.

(b) Let m and n denote two constants.

Then $y=mx+\frac{n}{x}$ (i.)

Two independent equations are necessary to determine the numerical values of m and n. To obtain these equations the data gives $x=-1$ when $y=2$, and $x=2$ when $y=4$. Substituting these values in (i.), then we have

$2=-m-n$. (ii.)

$4=2m+\frac{n}{2}$. (iii.)

Multiplying (iii.) by 2 and adding to (ii.) we obtain

$10=3m, \quad \therefore m=\frac{10}{3}$.

Substituting this value in (ii.) $\qquad n=\frac{16}{-3}$.

Hence $y=\frac{10}{3}x-\frac{16}{3x}$;

Or $\quad 3y=10x-\frac{16}{x}$.

Ex. 3. If $x+y : x-y :: 2 : 3$, find the ratio of

$x^2+xy+y^2 : x^2-xy+y^2$. (1903)

$\frac{x-y}{x+y}=\frac{3}{2}$.

Hence $\frac{x-y}{x+y}+1=\frac{3}{2}+1$; $\qquad$ or $\frac{2x}{x+y}=\frac{5}{2}$.

Similarly $\frac{-2y}{x+y}=\frac{1}{2}$.

Hence $\frac{x}{y}=-5, \qquad \therefore x=-5y$.

Thus $x^2+xy+y^2=(25-5+1)y^2=21y^2$,

and $x^2-xy+y^2=(25+5+1)y^2=31y^2$,

$\therefore x^2+xy+y^2 : x^2-xy+y^2=21 : 31$.

Ex. 4. The time taken by a body to slide down an inclined plane varies directly as the length of the plane, and inversely as the square root of the vertical height.

The time is one second when the plane is 12 feet long and 9 feet high. Find the time taken when the plane is 15 feet long and 6 feet high. (1905)

Let t be the time, l the length, and h the height of the plane.

Then $t \propto \frac{l}{\sqrt{h}} \qquad \therefore t=m\frac{l}{\sqrt{h}}$.

To find m we have given that $t=1$ when $h=9$, $l=12$,

$\therefore 1=m\times\frac{12}{3}$ or $m=\frac{1}{4}$.

Hence, when $l=15$ and $h=6$,

$t=\frac{1}{4}\times\frac{15}{\sqrt{6}}=\frac{5\sqrt{6}}{8}$.

Ex. 5. It is known that z varies as the sum of two quantities x and y, and that y varies as x^2; it is also known that when x is equal to 3, y is equal to 12, and z is equal to $4\frac{1}{2}$; find z in terms of x. (1902)

Ans. $z=\frac{3x+4x^2}{10}$.

Ex. 6. (a) If $a^2-ab+b^2 : c^2-cd+d^2 :: ab : cd$, show that either $a : b :: c : d$ or $a : b :: d : c$.

(b) A quantity x equals the sum of two quantities, one of which varies as t, and the other as t^2; when $t=3$, $x=159$, and when $t=5$, $x=425$; find the value of x when $t=10$. (1899)

Ans. 1650.

Ex. 7. Given $\frac{x}{a}=\frac{y}{b}=\frac{z}{c}$ and $\frac{m}{n}=\frac{p}{q}$, show that

(a) $\frac{x^2+y^2}{a^2+b^2}=\frac{y^2+z^2}{b^2+c^2}=\frac{z^2+x^2}{c^2+a^2}$.

(b) $\frac{mx+py}{ma+qb}=\frac{mx-pq}{ma-qb}$. (1900)

Ex. 8. State what is meant when one quantity is said to vary as another quantity, and give an example.

It is known that x varies directly as y and inversely as z; it is also known that x is 11, when y is 300 and z is 30; find the value of y when x changes to 12 and z to 29·7. (1900)

Ans. 324.

Ex. 9. If $a : b :: c : d$, show that—

(a) $\frac{a+c}{a-c}=\frac{b+d}{b-d}$.

(b) $\frac{(a-c)b^2}{(b-d)cd}=\frac{a^2-b^2-ab}{c^2-d^2-cd}$.

(c) $\frac{ab^3-c^3d}{b^2c^2-c^3d}=\frac{b^3}{ad^2}+1$. (1900)

Ex. 10. Define mean proportional and continued proportion.

If a, b, c are in continued proportion, show that

$a^2+b^2 : b^2+c^2 :: a : c$.

Also show that $1+\sqrt{3}$, $4+2\sqrt{3}$, $10+6\sqrt{3}$, $28+16\sqrt{3}$, are in continued proportion. (1901)

Ex. 11. Define the duplicate ratio of a given ratio.

If $a : c$ is the duplicate ratio of $a : b$, find c in terms of a and b.

If $a-x : b-x$ is the duplicate ratio of $c : d$, and if $a : b :: c : d$, show that $(c+d)x=bc$. (1901)

MESSRS. BELL'S EDUCATIONAL WORKS

Educational Catalogue sent post free on application

NEW SCHOOL ARITHMETIC

By CHARLES PENDLEBURY, M.A.

With or without Answers, 4s. 6d.; or in Two Parts, 2s. 6d. each. Key to Part II., 8s. 6d. net.

In this book the *Metric System of Weights and Measures* is given a prominent position, being introduced simultaneously with the British Weights and Measures, and treated as on practically the same footing. *Graphical Illustrations* are used very freely, and the general use of *Graphs* is treated in a separate section. *Approximations and Decimalisation of Money* are also treated fully. *Algebraical Symbols* are used wherever it seemed advantageous to do so, and there are sections on *Elementary Mensuration* and on *Logarithms*.

"The new sections on graphs, mensuration, and logarithms add considerably to the value of the book, which in this form is unrivalled."—*Athenæum*, June 3, 1905.

NEW SCHOOL EXAMPLES IN ARITHMETIC. Extracted from the above. With or without Answers, 3s.; or in Two Parts, without Answers, 1s. 6d. and 2s.

ELEMENTARY ALGEBRA

By W. M. BAKER, M.A., and A. A. BOURNE, M.A., of Cheltenham College.

Complete. Crown 8vo. Second Edition, with or without Answers, 4s. 6d., or in Two Parts—

PART I.—To Quadratic Equations, 2s. 6d.; or with Answers, 3s.

PART II.—With or without Answers, 2s. 6d.

TEACHERS' EDITION, with the Answers to each set of Examples printed opposite them. Two Parts, 5s. net each.

COMPLETE KEY, with numerous Graphical and other Figures, 10s. net; or in Two Parts, 5s. net each.

EXAMPLES IN ALGEBRA. Extracted from the above. With or without Answers, 3s.; or in Two Parts: Part I., 1s. 6d., or with Answers, 2s.; Part II., with or without Answers, 2s.

A FIRST ALGEBRA

By W. M. BAKER, M.A., and A. A. BOURNE, M.A.

Small Crown 8vo. 192 pages. 1s. 6d., or with Answers, 2s.

The range of this book, which includes Quadratic Equations and Fractional Negative Indices, will be found specially suitable for the Local Examinations.

Works by C. P. MASON, B.A., F.C.P.

ENGLISH GRAMMAR, 183rd–187th Thousand. Price 3s. 6d., cloth.

A SHORTER ENGLISH GRAMMAR, with copious and carefully graded Exercises, containing the pith of the "English Grammar," with fewer minutiæ and more exercises, 68th Thousand. Price 3s. 6d., cloth.

OUTLINES OF ENGLISH GRAMMAR for the use of Junior Classes. 127th–136th Thousand. Price 2s., cloth.

FIRST NOTIONS OF GRAMMAR for young Learners. 155th–164th Thousand. Price 1s., cloth.

PRACTICE AND HELP IN THE ANALYSIS OF SENTENCES. Price 2s., cloth.

CODE STANDARD ENGLISH GRAMMAR, adapted to the requirements of the successive standards of the New Code. Five Parts.

LONDON: GEORGE BELL & SONS, PORTUGAL STREET, LINCOLN'S INN, W.C.

THOMAS NELSON & SONS'

ROYAL SCHOOL SERIES

THE NATURAL METHOD OF TEACHING MODERN LANGUAGES

The confessed excellence of commercial education in Germany is no doubt due in part to the use of modern scientific methods of instruction. Especially is this the case in the teaching of modern languages. Teachers in this country will find in the following books of "NELSON'S SCHOOL AND COLLEGE SERIES," manuals which not only follow the methods most approved in Germany, but which are in many respects in advance of any text-books hitherto published at home or abroad. The method adopted is—

1. **Conversational,** as suits a spoken language.
2. **Systematic,** keeping in view both the form and meaning of words.
3. **Concrete,** being based throughout on objects and pictures and actions.

To facilitate class teaching and revisal work, the pictures in each book are issued separately in the form of **large Wall Sheets.**

Elementary Object Lessons in French (Book I.). By ALEC CRAN, M.A., Senior French Master, Royal High School, Edinburgh; Examiner in French and German for the University of Aberdeen. Post 8vo, cloth. With many Illustrations. Price 1s. 6d.

Object Lessons in French (Book II.). By ALEC CRAN, M.A. Post 8vo, cloth. With many Illustrations. Price 1s. 6d.

This book contains a series of somewhat more advanced conversational lessons, which are fully illustrated by pictures and diagrams.

Advanced Course
OF
Object Lessons in French.
By ALEC CRAN, M.A.
With Vocabulary. Fully Illustrated.
Cloth, price 1s. 6d.

This volume completes the series of three books of Object Lessons and Picture Lessons in French. Books I. and II. contain, in addition, Elementary Grammar Lessons and Exercises for translation into French. As many as possible of the most familiar words and expressions have been included, and an attempt has been made to base the lessons on subjects which, it is hoped, may be found both useful and interesting.

Elementary Object Lessons in German (Book I.). Being a Translation of "Elementary Object Lessons in French." By J. J. TROTTER, M.A., German Master, Royal High School, Edinburgh. Post 8vo, cloth. With many Illustrations. Price 2s.

Object Lessons in German (Book II.). Being a Translation of "Object Lessons in French." By J. J. TROTTER, M.A. Post 8vo, cloth. With many Illustrations. Price 2s.

Nelson's First German Reader. Edited by J. J. TROTTER, M.A. Post 8vo, cloth. Price 2s.

Complete Catalogue of the Royal School Series and of Modern Language Object Lesson Sheets post free on application.

T. NELSON & SONS, 35 & 36 Paternoster Row, London, E.C.; Edinburgh, Dublin, & New York

OUR QUERY COLUMN

RULES.

1. Each correspondent is restricted to *one* question.
2. Each query must be accompanied by the name and address of the correspondent, and the *coupon* which appears on the back wrapper of the current number of the Journal.
3. CORRESPONDENTS MUST IN ALL CASES STATE THE SOURCE FROM WHICH THEIR QUERY HAS BEEN OBTAINED.

The Editor reserves to himself the right to decline to answer any question which is, in his judgment, unsuited to the Magazine.

Xuxis.—(*a*) Let AB, AC be two radii of a given circle; complete the triangle ABC, and draw a circle to pass through A and to touch BC at C; let this second circle cut the former circle in

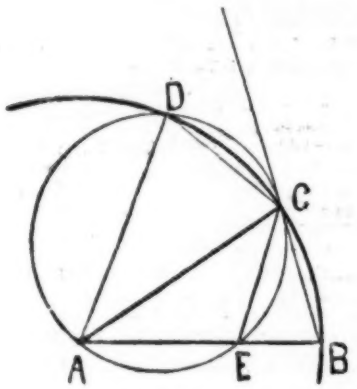


FIG. 1.

D, and the radius AB in E. Show that the chord CE equals the chord CD. (*b*) Consider the case in which the angle BAC is two-thirds of a right angle. (*c*) Let BAC be rather greater than a right angle, and the radius of the first circle not less than

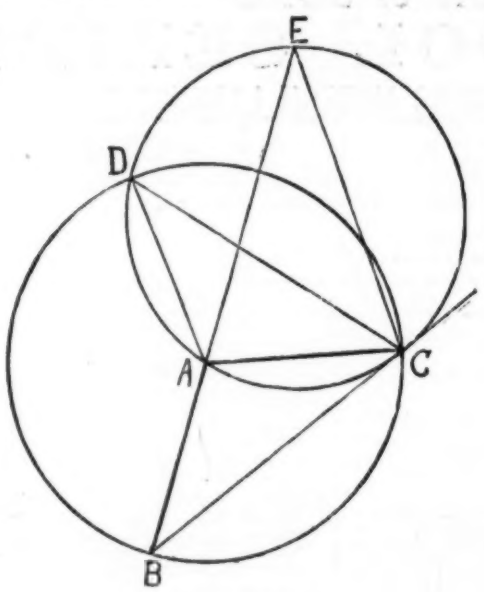


FIG. 2.

2 inches long. Draw the diagram carefully in this case, and show that the theorem in (*a*) holds good.

(S. and A. Mathematics, Stage 2, 1905.)

Because BC touches the circle DCA at the point C, and CA is a chord passing through C, the point of contact, therefore the angle BCA is equal to CDA, an angle in the alternate segment. Also AD, AC, AB being radii of the first circle are equal to one another; therefore the angle ADC is equal to the angle ACD, and the angle ACB to the angle ABC. Hence the four angles ADC, ACD, ACB, ABC are equal to one another, and CD is equal to CB.

Again, because AECD is a cyclic quadrilateral, therefore the angles ADC, AEC are together equal to two right angles. But the angles AEC, CEB are together equal to two right angles. Therefore the angle CEB is equal to the angle ADC. But the angle ADC has been proved to be equal to the angle ABC, or EBC; therefore the angle CEB is equal to the angle CBE. Hence CE is equal to CB. But CB has been shown to be equal to CD. Therefore the chord CE equals the chord CD.

(*b*) If BAC is two-thirds of a right angle, then, since AB equals AC, the triangle ABC is obviously equilateral. Hence in this case CB is equal to CA. But we have shown that CE equals CB. Hence if BAC is two-thirds of a right angle CE becomes equal to CA. The point E will therefore coincide with A, and the second circle will touch BA at A.

(*c*) If the diagram for this case is drawn as the question directs, we find the point E is in BA produced, and the chord CE equals the chord CE as before.

As in (*a*) we have the four angles ADC, ACD, ACB, ABC equal to one another and CD equal to CB. But the angles ADC, AEC, being angles in the same segment ADEC, are equal to one another. Hence the angle CEB is equal to the angle CBE. Therefore CE equals CB or CD.

P. W. B.—The points at which the lines bisecting the angles A, B, C of a triangle cut the opposite sides are joined. Show that the area of the triangle so formed bears to that of the triangle ABC the ratio

$$\frac{2\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}}{\cos\frac{B-C}{2}\cdot\cos\frac{C-A}{2}\cdot\cos\frac{A-B}{2}}.$$

(Hamblin Smith's *Elementary Trigonometry.*)

Let the bisectors of the angles A, B, C cut the opposite sides in D, E, F.

Because FC bisects the angle C, therefore

$$AF : FB :: AC : CB.$$

Hence $\frac{AF}{FB}=\frac{b}{a}$; and therefore $\frac{AF+FB}{FB}=\frac{a+b}{a}$.

Therefore $\frac{FB}{AB}=\frac{a}{a+b}$.

But $FB : AB :: \Delta FDB : \Delta ADB.$

$$\therefore \frac{\Delta FDB}{\Delta ADB}=\frac{a}{a+b} \quad \ldots\ldots (1$$

Similarly $$\frac{\Delta ADB}{\Delta ABC}=\frac{c}{b+c} \quad \ldots\ldots (2)$$

Multiplying (1) and (2) together we have

$$\frac{\Delta FDB}{\Delta ABC}=\frac{ac}{(a+b)(b+c)}.$$

Hence, denoting the area of the triangle ABC by S, we have

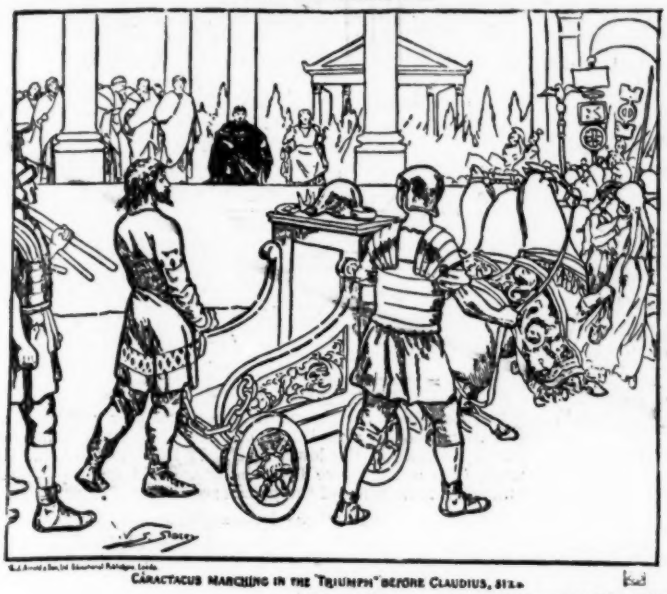
Area of the triangle $FDB=\frac{ac}{(a+b)\ (b+c)}\cdot S.$

Similarly we have

Area of the triangle $DEC=\frac{ab}{(b+c)\ (c+a)}\cdot S,$

and Area of the triangle $EFA=\frac{bc}{(c+a)\ (a+b)}\cdot S.$

THE 'A.L.' HISTORY PICTURES, No. 2.



CARACTACUS MARCHING IN THE "TRIUMPH" BEFORE CLAUDIUS, 51 A.D.

The 'A.L.'

HISTORY PICTURES.

A Series of Pictures, large in size, bold in style, accurate in Drawing and Colouring, of **NOTED EVENTS or EPOCH-MAKING INCIDENTS** in our Country's Story, and also illustrating **NATIONAL LIFE, DRESS, ARCHITECTURE, MANNERS, and CUSTOMS.**

Each Sheet, 40 in. × 36-in., in Full Scale of Colours.

Six New Pictures have recently been added, viz.:—

No. 2. Caractacus before Claudius.
„ 12. The Murder of Becket.
„ 25. Joan of Arc at Orleans.
„ 71. Wolfe at Quebec—Climbing the Heights.
„ 85. Charge of the Light Brigade.
„ 86. Second Relief of Lucknow.

The pictures can be had in any of the following forms:—

ANY ONE SHEET, C.R.V. . . . . net 4/-
ANY THREE SHEETS, C.R.V. . . . . „ 11/3
ANY SIX SHEETS, C.R.V. . . . . „ 21/-
SET OF ANY SIX, mounted on calico, fastened on top-lath, and with protecting cover . . . . . „ 13/6

FRAMED & GLAZED, in 2-in. Fumed and Reeded-oak Frame with ½-in. Gilt Slip, mounted on stretcher, each net 15/6
Do. do. do. any three . . . „ 45/-
Do. do. do. any six . . . „ 87/-
Framed and Glazed Pictures are *Carriage free.*

COMPLETE ILLUSTRATED LIST OF THE SERIES POST FREE.

E. J. ARNOLD & SON, Ltd., EDUCATIONAL PUBLISHERS, LEEDS.

TO ART TEACHERS AND STUDENTS.

The Examinations of the Board of Education are rapidly approaching, and much valuable time may be saved in Preparatory Work by the use of

CUSACK'S ART TEXT BOOKS

which are meeting with most gratifying recognition from Head Masters and Assistant Teachers of Art Schools in all parts of the Kingdom. They are thoroughly up to date, and provide for all the requirements of the recently revised "Art Directory."

Cusack's Freehand. PART I. Conventional Forms. 3s. 6d. net; post free, 3s. 10d.

Cusack's Photographic Representations of Ornament. THIRD EDITION. Containing 35 Plates, including some set at previous Art Examinations. 1s. 6d. net; post free, 1s. 8½d.

Cusack's Freehand. PART II. Natural Forms, Animals, Plants, and Common Objects. 3s. 6d.; post free, 3s. 10d.

Cusack's Blackboard Drawing. 3s. 6d. net; post free, 3s. 10d.

Cusack's Model Drawing. 3s. 6d. net; post free, 3s. 10d.

Cusack's How to Draw the Geometric Models and Vases. 9d. net; post free, 10d.

Cusack's Shading. 3s. 6d. net; post free, 3s. 10d.

Cusack's Plane Geometry. 3s. 6d. net; post free, 3s. 10d.

Cusack's Solid Geometry. For Science Subject I., or Art Geometry. 3s. 6d. net; post free, 3s. 10d.

Cusack's Patent Geometrikon. (Box of Apparatus for Simplifying the Study of Solid Geometry.) 3s. 6d. net, post free, 3s. 10d.

Cusack's Perspective. 3s. 6d. net; post free, 3s. 10d.

For ONE GUINEA we will send to any Art Teacher, carriage paid, one complete set of the above Text-books.

CITY OF LONDON BOOK DEPOT, WHITE STREET, MOORFIELDS, LONDON, E.C.

DELICIOUS COFFEE

RED WHITE & BLUE

FOR BREAKFAST & AFTER DINNER.

In making, use less quantity, it being so much stronger than ordinary COFFEE.

England's Best Value

"BONGOLA" TEA

Has no Equal

Now $\Delta DEF = \Delta ABC - (\Delta FBD + \Delta DEC + \Delta EFA)$

$$= S - \left\{\frac{ca}{(a+b)(b+c)} + \frac{ab}{(b+c)(c+a)} + \frac{bc}{(c+a)(a+b)}\right\}.S$$

$$= \left\{1 - \frac{ca}{(a+b)(b+c)} - \frac{ab}{(b+c)(c+a)} - \frac{bc}{(c+a)(a+b)}\right\}.S$$

$$= \frac{(a+b)(b+c)(c+a) - ca(c+a) - ab(a+b) - bc(b+c)}{(a+b)(b+c)(c+a)}.S$$

$$= \frac{2abc}{(a+b)(b+c)(c+a)}.S.$$

But $$\frac{abc}{(a+b)(b+c)(c+a)} = \frac{a}{b+c}\cdot\frac{b}{c+a}\cdot\frac{c}{a+b}.$$

And

$$\frac{a}{b+c} = \frac{\sin A}{\sin B + \sin C} = \frac{2\sin\frac{1}{2}A\cos\frac{1}{2}A}{2\sin\frac{1}{2}(B+C)\cos\frac{1}{2}(B-C)} = \frac{\sin\frac{1}{2}A}{\cos\frac{1}{2}(B-C)}.$$

Similarly $$\frac{b}{c+a} = \frac{\sin\frac{1}{2}B}{\cos\frac{1}{2}(C-A)}, \text{ and } \frac{c}{a+b} = \frac{\sin\frac{1}{2}C}{\cos\frac{1}{2}(A-B)}.$$

$$\therefore \frac{2abc}{(a+b)(b+c)(c+a)}.S = \frac{2\sin\frac{1}{2}A\cdot\sin\frac{1}{2}B\cdot\sin\frac{1}{2}C}{\cos\frac{1}{2}(B-C)\cos\frac{1}{2}(C-A)\cos\frac{1}{2}(A-B)}.S.$$

Therefore the area of the triangle DEF bears to that of the triangle ABC the ratio

$$\frac{2\sin\frac{A}{2}\cdot\sin\frac{B}{2}\sin\frac{C}{2}}{\cos\frac{B-C}{2}\cdot\cos\frac{C-A}{2}\cdot\cos\frac{A-B}{2}}$$

Caliga.—If $\sin\theta + \cos\phi = a$ and $\sin\phi + \cos\theta = \beta$, find the values of θ and ϕ.

(Nixon's *Plane Trigonometry.*)

On squaring we have

$$\sin^2\theta + 2\sin\theta\cos\phi + \cos^2\phi = a^2 \quad . \quad . \quad . \quad (1)$$

$$\sin^2\phi + 2\sin\phi\cos\theta + \cos^2\theta = \beta^2 \quad . \quad . \quad . \quad (2)$$

From (1) and (2) by addition we have

$$\sin^2\theta + \cos^2\theta + \sin^2\phi + \cos^2\phi + 2(\sin\theta\cos\phi + \cos\theta\sin\phi) = a^2 + \beta^2.$$

$$\therefore\ 2\{1 + \sin(\theta+\phi)\} = a^2 + \beta^2.$$

Hence $$\theta + \phi = \sin^{-1}\frac{a^2+\beta^2-2}{2}.$$

Again from (1) and (2) by subtraction we have

$$\sin^2\theta - \sin^2\phi + \cos^2\phi - \cos^2\theta + 2(\sin\theta\cos\phi - \cos\theta\sin\phi) = a^2 - \beta^2.$$

$$\therefore\ \cos 2\phi - \cos 2\theta + 2\sin(\theta-\phi) = a^2 - \beta^2.$$

$$\therefore\ 2\sin(\theta+\phi)\sin(\theta-\phi) + 2\sin(\theta-\phi) = a^2 - \beta^2.$$

$$\therefore\ 2\{1 + \sin(\theta+\phi)\}\sin(\theta-\phi) = a^2 - \beta^2.$$

But we have shown that $2\{1 + \sin(\theta+\phi)\} = a^2 + \beta^2$.

$$\therefore\ \sin(\theta-\phi) = \frac{a^2-\beta^2}{a^2+\beta^2}.$$

Hence $$\theta - \phi = \sin^{-1}\frac{a^2+\beta^2}{a^2-\beta^2}.$$

Alpha.—Differentiate the expressions

$$\sin^{-1}\sqrt{\frac{1-x}{1+x}} \text{ and } \log_{10}\tan\sqrt{\frac{1-x^2}{1+x^2}}.$$

(B.Sc. London, 1903.)

If $$y = \sin^{-1}\sqrt{\frac{1-x}{1+x}},$$

then

$$\frac{dy}{dx} = \sqrt{\frac{1}{\left\{1 - \frac{1-x}{1+x}\right\}}}\cdot\frac{d}{dx}\left(\sqrt{\frac{1-x}{1+x}}\right)$$

$$= \frac{\sqrt{1+x}}{\sqrt{2x}}\cdot\frac{1}{2}\left(\frac{1-x}{1+x}\right)^{-\frac{1}{2}}\cdot\frac{d}{dx}\left(\frac{1-x}{1+x}\right)$$

$$= \frac{\sqrt{1+x}}{\sqrt{2x}}\cdot\frac{1}{2}\frac{\sqrt{1+x}}{\sqrt{1-x}}\cdot\frac{(-2)}{(1+x)^2}$$

$$= \frac{-1}{(1+x)\sqrt{2x(1-x)}}$$

Again, if $y = \log_{10}\tan\sqrt{\frac{1-x^2}{1+x^2}}$

then $y = \frac{1}{\mu}\log\tan\sqrt{\frac{1-x^2}{1+x^2}}$ where $\mu = 2{\cdot}3026$.

$$\therefore\ \frac{dy}{dx} = \frac{1}{\mu}\operatorname{cotan}\sqrt{\frac{1-x^2}{1+x^2}}\frac{d}{dx}\left(\tan\sqrt{\frac{1}{1+x^2}}\right)$$

$$= \frac{1}{\mu}\operatorname{cotan}\sqrt{\frac{1-x^2}{1+x^2}}\cdot\frac{1}{\cos^2\left(\sqrt{\frac{1-x^2}{1+x^2}}\right)}\frac{d}{dx}\left(\sqrt{\frac{1-x^2}{1+x^2}}\right)$$

$$= \frac{1}{\mu}\cdot\frac{1}{\sin\sqrt{\frac{1-x^2}{1+x^2}}\cos\sqrt{\frac{1-x^2}{1+x}}}\cdot\frac{1}{2}\left(\frac{1-x^2}{1+x^2}\right)^{-\frac{1}{2}}\cdot\frac{d}{dx}\left(\frac{1-x^2}{1+x^2}\right)$$

$$= \frac{1}{\mu\sin 2\sqrt{\frac{1+x^2}{1-x^2}}}\cdot\frac{\sqrt{1-x^2}}{\sqrt{1+x^2}}\cdot\frac{-4x}{(1+x^2)^2}$$

$$= \frac{-4x\operatorname{cosec} 2\sqrt{\frac{1-x^2}{1+x^2}}}{\mu\cdot(1+x^2)\cdot\sqrt{1-x^4}}.$$

Sinew.—ABCD is a board in the shape of a parallelogram standing with its side BC in contact with a rough inclined plane, B being on the lower level. If $BC = a$, $CD = b$, and the angle C is acute, prove that the board will not topple over unless the inclination of the plane exceeds

$$\tan^{-1}(a - b\cos a)/b\sin a.$$

(*Tutorial Statics.*)

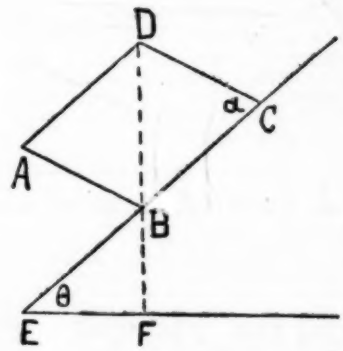


FIG. 3.

Let θ be the inclination of the plane when the diagonal BD is just vertical. Since the *C.G.* of parallelogram lies in BD, the board will not topple over unless the inclination of the plane exceeds θ.

Let α denote the angle C. Then since the angle $DBC = (90° - \theta)$, the angle $BDC = 180° - \frac{1}{2}\{(90° - \theta) + \alpha\} = 90° - (\alpha - \theta)$.

But $$\frac{\sin BDC}{\sin DBC} = \frac{BC}{CD}.$$

$$\therefore\ \frac{\sin\{90° - (\alpha-\theta)\}}{\sin(90° - \theta)} = \frac{a}{b}.$$

$$\therefore\ \frac{\cos(\alpha-\theta)}{\cos\theta} = \frac{a}{b}.$$

$$\therefore\ \frac{\cos\alpha\cos\theta + \sin\alpha\sin\theta}{\cos\theta} = \frac{a}{b}.$$

$$\therefore\ \cos\alpha + \sin\alpha\tan\theta = \frac{a}{b}.$$

$$\therefore\ \sin\alpha\tan\theta = \frac{a}{b} - \cos\alpha = \frac{a - b\cos\alpha}{b}.$$

$$\therefore\ \tan\theta = \frac{a - b\cos\alpha}{b\sin\alpha}.$$

Hence $$\theta = \tan^{-1}(a - b\cos\alpha)/b\sin\alpha.$$

T. V. P.—Thanks for your solution.

Replies to "Scamp," "W. H.," and "Spes" are unavoidably held over. Replies can be had on application to the Query Editor, Office of the Journal.

SUGGESTIONS TO TEACHERS
ON PRACTICAL SCHOOL METHODS

THE Board of Education has recently issued a Special Blue Book and Companion to the Code, extending over 150 pages.

In the respective subjects enumerated by the Board the following groups of classified books will be found invaluable to teachers in providing ample and delightful material for carrying out the suggestions relating to Speech and Oral Composition, through Fairy Tales, Old Romances, Myths, and Legends, and also in teaching Recitation, Reading, Geography, History, and National and Patriotic Songs.

The *Penny Poets* and the *Books for the Bairns* now comprise nearly 200 volumes, and their usefulness in the schools of the Empire has been attested over and over again by H.M. Inspectors and by the recognised authorities in the Educational World. It may be timely, therefore, to draw special attention to those particular numbers which fall—in a very special way—within the category of the subjects recommended by the Board of Education.

CLASS A.—FOR INFANTS.
For Varied Occupations and Correct Speech.

BOOKS FOR THE BAIRNS:—

No. 98.—**PICTURES TO PAINT.**
No. 103.—**A PICTURE BOOK FOR THE BAIRNS.**
No. 114.—**FROEBEL'S SONGS AND GAMES.**

CLASS B.—FOR INFANTS AND JUNIORS.
For Oral Composition, through Story Telling, Pictures, Games, and Children's Plays, Fairy Tales, Simple Poems, &c. See the following:—

BOOKS FOR THE BAIRNS:—

No. 1.—**ÆSOP'S FABLES. Part I.**
No. 3.—**NURSERY RHYMES.**
No. 4.—**NURSERY TALES.**
No. 5.—**REYNARD THE FOX.**
No. 6.—**BRER RABBIT.**
No. 7.—**CINDERELLA, AND OTHER FAIRY TALES.**
No. 12.—**STORIES FROM HANS ANDERSEN.**
No. 13.—**STORIES FROM "GRIMM'S FAIRY TALES."**
No. 18.—**TWICE ONE ARE TWO.**
No. 19.—**MORE NURSERY RHYMES.**
No. 20.—**MORE STORIES ABOUT BRER RABBIT.**
No. 22.—**THE CHRISTMAS TREE, AND OTHER FAIRY TALES.**
No. 26.—**ÆSOP'S FABLES. Part II.**
No. 33.—**ALADDIN AND THE WONDERFUL LAMP.**
No. 41.—**FAIRY TALES FROM FLOWERLAND.**
No. 49.—**THE ENCHANTED DOLL.**
No. 58.—**THE SNOW QUEEN. By Hans Andersen.**
No. 65.—**UNCLE TOM'S CABIN. Part I.**
No. 66.—**UNCLE TOM'S CABIN. Part II.**
No. 85.—**THE BABES IN THE WOOD, Etc.**
No. 94.—**NEW NURSERY TALES.**
No. 110.—**THE WISHING CARPET.**
No. 111.—**THE WATER BABIES. Part I.**
No. 112.—**THE WATER BABIES. Part II.**

ILLUSTRATED RECITATIONS.

No. 84.—**Edited by R. S. WOOD.**
No. 104.—**Edited by R. S. WOOD.**
No. 82.—**JOHN GILPIN.**
No. 87.—**THE PIED PIPER.**
No. 97.—**THE ANCIENT MARINER.**

CLASS C.—FOR SENIOR CLASSES.
Poems for the Schoolroom and the Scholar.

Edited by R. S. WOOD, being Nos. 49, 54, 56, and 60 in "THE PENNY POETS."

For Geography, History, Silent Reading, and Oral Composition, including Myths, Sagas, Legends, Romances, Stories of Greece and Rome, the Vikings, Travel, Voyage and Adventure. See the following:—

BOOKS FOR THE BAIRNS:—

No. 27.—**LABOURS OF HERCULES.**
No. 30.—**PERSEUS THE GORGON SLAYER.**
No. 31.—**FAMOUS STORIES FROM ENGLISH HISTORY.**
No. 36.—**GREAT EVENTS IN BRITISH HISTORY.**
No. 38.—**SEVEN CHAMPIONS OF CHRISTENDOM.**
No. 43.—**KING ARTHUR AND HIS KNIGHTS.**
No. 51.—**TALES OF LONG AGO.**
No. 53.—**THE RED CROSS KNIGHT. Part I.**
No. 54.—**THE RED CROSS KNIGHT. Part II.**
No. 60.—**THE WONDER BOOK.**
No. 64.—**STORIES FROM ANCIENT ROME.**
No. 71.—**DON QUIXOTE. Part I.**
No. 73.—**DON QUIXOTE. Part II.**
No. 83.—**STORIES FROM CHAUCER.**
No. 99.—**FAIRY TALES OF THE ANCIENT GREEKS.**
No. 101.—**THE QUEST OF THE GOLDEN FLEECE.**
No. 109.—**THOR AND THE GIANTS.**
No. 113.—**THE STORY OF HIAWATHA IN PROSE.**

CLASS D.—NATIONAL SONGS.
See the "Penny Poets," No. 65.—National Songs, with the music in Tonic Sol-fa, containing Thirty-one Songs, arranged as Songs of Home, Songs of the Open Air, Songs of the Navy, Soldiers' Songs, and Patriotic Songs.

FOR SCHOOL AND HOME ENTERTAINMENTS.
The following Plays may now be obtained:—

CINDERELLA, THE SLEEPING BEAUTY, DICK WHITTINGTON, BEAUTY AND THE BEAST, THE SLAVE OF THE LAMP.

A parcel of **100** of these books will be sent to any School in the United Kingdom for **7/-**.

Books for the Bairns' Office, Mowbray House, Norfolk St., London, W.C.,

For School Entertainments.

THE PRINCE AND THE MISTLETOE. A Norse Legend. Old Notation, 2s.; Sol-fa, 6d. Words only, 3d., or 2s. 6d. per dozen, post free.

THE MONK'S STRATAGEM; or, The Missing Heir. Comic Operetta. Old Notation, 2s.; Sol-fa, 6d. Words only, 3d., or 2s. 6d. per dozen, post free.

BY THE GANGES' BANKS. Patriotic Cantata. Old Notation, 2s.; Sol-fa, 6d. Words only, 2d., or 1s. 6d. per dozen, post free.

BRITANNIA, QUEEN OF THE OCEAN. Patriotic School Cantata. Old Notation, 1s. 6d.; Sol-fa, 6d. Words, 2d., or 1s. 6d. per dozen.

FUN OF THE FAIR. Humorous Cantata and Variety Entertainment. Old Notation, 1s. 6d. Words, 2d., or 1s. 6d. per dozen.

THE ISLE OF PEARL. Fanciful Operetta. Old Notation, 1s. 6d.; Sol-fa, 6d. Words, 2d., or 1s. 6d. per dozen.

MERRYTON MARKET. Humorous Rustic Operetta. Old Notation, 1s. 6d.; Sol-fa, 6d. Words, 2d., or 1s. 6d. per dozen, post free.

ABOU HASSAN; or, The Baker's Dream. Humorous Operetta. Old Notation, 1s. 6d.; Sol-fa, 6d. Words, 2d., or 1s. 6d. per dozen, post free.

FATHER TIME AND HIS CHILDREN. The Popular Cantata. Old Notation, 1s.; Sol-fa, 6d. Words, 2d., or 1s. 6d. per dozen, post free.

THE WHITE CASTLE. Romantic Children's Operetta. Old Notation, 2s. Words, 2d., or 1s. 6d. per dozen, post free.

MISFITS; or, Strange Adventures in a Waxwork Show. Humorous Operetta. Old Notation, 6d. Words, 2d., or 1s. 6d. per dozen, post free.

MR. NOBODY. Fanciful Children's Operetta. Old Notation, 1s. Words, 2d., or 1s. 6d. per dozen, post free.

LOST IN FAIRYLAND. Fairy Masque for Girls. Old Notation, 1s. Words, 2d., or 1s. 6d. per dozen, post free.

THE ENCHANTED VALLEY. Fanciful Children's Operetta. Music (Old Notation), 1s. Words, 2d., or 1s. 6d. per dozen, post free.

FATHER CHRISTMAS. Cantata for Senior Scholars. Old Notation, 6d.

JACKIE'S DREAM. Musical Play. Old Notation, 6d.

TWENTY NURSERY RHYMES. Games and Rhymes for Little Children. Words. Music (both Notations) and Actions, 6d.

BEAUTY AND THE BEAST. Musical Play (both Notations), 6d.

MATRIMONEE! Humorous Musical Sketch for Boys and Girls (both Notations), 1s. 6d.

THE OLD YEAR AND THE NEW. Cantata Operetta. Old Notation, 6d.

MINSTREL MELODIES. Ten Original Plantation Songs. In both Notations, 1s., post free.

THE HUMANOPHONE. Burlesque Entertainment. Old Notation, 6d.

TIME'S HOUR-GLASS. Simple Cantata. Words and Music, 6d., post free.

CINDERELLA. Children's Play. Both Notations, 10d., post free.

SANTA CLAUS. Children's Operetta. Music (Old Notation), 6d. Words, 2d., or 1s. 6d. per dozen, post free.

MORNING SCHOOL. Operetta for Boys and Girls. Words and Music (both Notations), complete, 6d.

PUSSY'S PARLIAMENT. Humorous Recitation for Little Children, with Incidental Music. Old Notation, 6d.

LITTLE ORATORS. A Humorous Action Song. Old Notation, 2d.

THE LAND OF THE DUMPS. Humorous Musical Sketch for Boys and Girls (or Boys only). Words and Music (both Notations), 6d. Words only, 1d., or 9d. per dozen, post free.

THE FANCY DRESS BALL. Play for Young Children. Words and Music (both Notations), 6d.

THE HAUNT OF THE BUTTERFLIES. Short Play for Little Children (both Notations), 4d.

These Dances have been specially written and arranged with explanatory diagrams to assist teachers in introducing such an item into a Cantata.

DANCE OF THE IMPS. A Humorous Dance. Price 6d.

THE BELLENDEN GAVOTTE. A slow and stately Dance. Price 6d.

Dances arranged by H. E. TURNER. Music by H. LONGHURST and G. G. LEWIS, Joint-Authors of "By the Ganges' Banks," "King Arthur," &c.

CHARMING DITTIES. Twelve Songs for Children, set to Music by W. W. PEARSON. Words and Music (both Notations), 1s.

ACTION SONGS.

O! Won't you buy a Dolly? By CLEMENTINE WARD.
Hurrah for the Sailors. By T. MARTIN MARTIN.
The Doll's Complaint. By CLEMENTINE WARD.
Handy Jack. By MARGARET CAMERON.
Foolish Thoughts. By LOUIS D. MARSDEN.
Proudly Wave the Union Jack. By JOHN N. CROWTHER.

Both Notations. Price 3d. each, post free. A Sample Set of the Six Songs will be forwarded, post free, for a Shilling.

SELECTIONS FOR SCHOOL ENTERTAINMENTS,

Consisting of Recitations, Dialogues, Debates, &c., all of which have been tested and proved successful. Twenty Parts. Each Number, post free, 2½d.; or the Twenty, post free, for 3s. 4d.

Specimen Copy of the above Cantatas, &c., will be sent, post free, for the published price, by writing to . . .

Mr. W. SHELLARD LATHAM,
3 Racquet Court, Fleet Street, London, E.C.

☞ **Send for Illustrated and Descriptive Handbook (20 pages). Copy post free.**

THE EDITOR'S TABLE

CAMBRIDGE UNIVERSITY PRESS, FETTER LANE, LONDON, E.C.

On Models of Cubic Surfaces. By W. H. Blyth, M.A. The general theory of cubic surfaces will probably be familiar to those acquainted with Salmon's *Geometry of Three Dimensions*, or Frost's *Solid Geometry*, but the analytical method given by the equation of the third degree in Cartesian Co-ordinates representing a cubic surface, is probably not so obvious as the application of projective Geometry to surfaces of the third degree; to those familiar with the shape of a cubic surface and the changes that occur under certain conditions this volume will be of interest. The contents have in part already been contributed to the columns of various scientific journals. The author is to be congratulated on this the latest addition to the literature of the subject.

THE CHURCH MISSIONARY SOCIETY, SALISBURY SQUARE, LONDON, E.C.

Systematic Scripture Study: Illustrated Methods of Bible Study for Beginners and Others. By the Rev. D. H. D. Wilkinson, Secretary C.M.S. This little book should be of distinct value to those for whom it is chiefly designed. It enumerates various methods of Bible Study which are open even to the comparatively uneducated layman, such as Historical, Biographical, Analytical, and others, and in a series of short chapters it deals with each method, not only describing but also illustrating by actual examples how the method may be carried out.

CLARENDON PRESS, AMEN CORNER, LONDON, E.C.

Elementary Modern Geometry. Part I. Experimental and Practical. By H. G. Willis, M.A. This book, arranged on the lines that the first lessons in Geometry should necessarily be of an experimental and practical kind, is well worth the attention of teachers. The methods, folding a piece of paper to indicate the intersection of two planes, the bisection of a line and an angle, using tracing paper to add and subtract angles, cutting out the three corners of a triangle, and fitting the corners together to find the sum of the angles, etc.: although mathematically inadmissible, they are usually considered sufficient in experimental science, and serve the useful purpose of familiarising a student with some of the most important results in Geometry; these will be helpful when he proceeds to read the later portions of the book. There is a good collection of exercises, the answers to which are given. Also a section dealing with graphs, but this is so brief that we fail to see how any student can follow it with advantage.

JOHN MURRAY, ALBEMARLE STREET, LONDON, W.

An Intermediate Course of Mechanics. By Alfred W. Porter, B.Sc. The contents of this volume include those portions of Mechanics which are necessary for the Intermediate Pass Examination of the University of London, and may be said to furnish a sound elementary course in Dynamics and the Mechanics of Fluids. The Mathematics are throughout of an elementary character. The typical examples fully worked out, together with the exercises at the end of each section, will be of great assistance to students, more especially as the answers to these are given at the end of the book. There is also a set of Miscellaneous Examples, together with some of the recent papers set at the Intermediate Examination.

OLIVER AND BOYD, EDINBURGH.

An Introductory Course in Practical Physics. By James Moffat, M.A., B.Sc. This course on Practical Physics includes the work sheets used in the classes of the Greenock Higher Grade School, together with some additional matter; the experiments indicated have therefore the advantage that they have been thoroughly tested for several years in the classes referred to. In the preface some useful hints to teachers on how to make an introductory course effective are given. The experiments deal with Mensuration, Heat, and Mechanics, and throughout bear evidence of careful arrangement. The course indicated is an excellent one.

SWAN SONNENSCHEIN AND CO., LIMITED, HIGH STREET, BLOOMSBURY, LONDON, W.

Tekel: A Study of Educational Problems of the Day. By Frank J Adkins, M.A., St. John's College, Cambridge. Mr. Adkins is a fluent and copious contributor of educational articles to the periodical literature of the day, and in the volume before us he has gathered up a few of the ideas to which he has already given expression by those means. His ideas are always sane, and based on a study of educational problems more thorough and original than is yet common. This book leaves us with the feeling, however, that its treatment of the problems discussed is rather that of the periodical than of a book. There is much to be desired in the way of unity, coherence, and orderly development of thought. Mr. Adkins can do better than this, and doubtless he will yet do so. Passing from this grumble as to arrangement, we have nothing but praise for his ideas on the training of teachers, the moral and social side of school work, and the rest. The relation of the Appendix to the body of the work is not very obvious.

FREDERICK WARNE AND CO., BEDFORD STREET, LONDON, W.C.

Wild Flowers Month by Month in their Natural Haunts. By Edward Step, F.L.S., author of *Wayside and Woodland Blossoms*, etc. Vol. II. With one hundred and seventy-six illustrations reproduced from original photographs by the author. In this volume Mr. Step completes his wonderful botanical tour of the year, interpreted rather than illustrated by the camera. The photographs are an integral part of the work, and are worthy of the text. In our recent notice of the first volume of this work, we took occasion to explain the plan on which it is based. We can only add that throughout this volume the interest is sustained at the same high level. We accompany the writer on his rambles on the chalk-hills, by the river, through the wood, across the heath, between the fields, and round the meadow, and everywhere we see with his help our old and well-known friends among the flowers, and also new friends about whose names we were hitherto uncertain until we had the pleasure of Mr. Step's introduction to them. This mode of learning to see Nature is too pleasant to be called by the name of Science, but having "tried both ways," we prefer this. We can heartily recommend the work to all Nature-students, and specially to those teachers who are so thorough as to count the "school ramble" among their teaching methods. The whole book may be described as a series of ideal rambles.

WILLIAMS AND NORGATE, HENRIETTA STREET, LONDON, W.C.

School Teaching and School Reform: a Course of Four Lectures on School Curricula and Methods, delivered to Secondary Teachers and Teachers in Training at Birmingham during February 1905. By Sir Oliver Lodge, Principal of the University of Birmingham. This series of lectures, now issued in book form, deal with (1) Curricula and Methods, (2) Teaching in History and Science, (3) Secondary School Reform in General, and (4) Boarding School Problems. To quote the subjects announced for each lecture is enough to indicate the treatment; any one of the four subjects is sufficient for a long series of lectures, and to dispose of it in one is necessarily to preclude anything like serious discussion. So the lectures are really a series of talks about the matter in hand rather than attempts to solve its problems. With a lecturer of less ability, superficiality would be the inevitable result, but Sir Oliver Lodge is never superficial. Each lecture is a series of valuable and suggestive thoughts, often brilliant as well as luminous. The apposite illustrations and the striking *obiter dicta* make those lectures well worth preserving, and no teacher can fail to profit by reading and re-reading them.

BRITISH MUSEUM 28 OC 1905

NATIONAL SOCIETY'S

NEW STORY BOOKS

FOR THE YOUNG

JUST OUT

A GOODLY PEARL. By MARY H. DEBENHAM, Author of "The Star in the West," &c. With Four Full-page Illustrations by ISABEL WATKIN. Cloth boards, gilt, price 2s. 6d.

TALLBOY'S TREASURE, and other Stories. By KATHERINE E. VERNHAM, Author of "Susanna's Singing," &c. With Two Full-page Illustrations by ISABEL WATKIN. Cloth boards, gilt, price 1s. 6d.

LITTLE SUNBEAM. By ELEANORA H. STOOKE, Author of "Granfer and One Christmas Time." With Frontispiece by M. K. HUGHES. Cloth boards, gilt, price 1s.

AVERIL'S WILD OATS. By MARY NEILSON. With Frontispiece by ISABEL WATKIN. Cloth boards, gilt, price 1s.

NOTE.—A Complete Catalogue of the National Society's Story Books may be obtained on application.

NATIONAL SOCIETY'S DEPOSITORY,
WESTMINSTER. S.W.

Joseph Gillott's
JOSEPH GILLOTT'S PEARL PEN
"NEW METAL" PENS.

Teachers and School Managers should send for Specimen Cards of Joseph Gillott's School Pens—for 74 years the best.

The public has learned to associate the name of Joseph Gillott on a pen as the standard of highest excellence. There are Hundreds of varieties, to suit all hands.

JOSEPH GILLOTT'S PENS

In Sixpenny and Gross Boxes, of Stationers, &c., and from W. H. Smith & Son's Bookstalls. **Sample Card of School Pens** free on receipt of Penny Stamp for postage. **Sample Box of Thirty Pens, assorted,** for testing, Seven Stamps.
JOSEPH GILLOTT & SONS, 37 Gracechurch Street, London, E.C.

MANCHESTER
Correspondence College.

PHYSIOGRAPHY.
MATHEMATICS.
CHEMISTRY.
SOUND, LIGHT, AND HEAT.
MAGNETISM AND ELECTRICITY.
MECHANICS.
PHYSIOLOGY.
HYGIENE.
NATURE STUDY.
BOTANY.
ZOOLOGY.
BIOLOGY.

Correspondence tuition is given in the subjects enumerated for the **BOARD OF EDUCATION (S.K.), MATRICULATION, INTERMEDIATE SCIENCE, SCHOLARSHIP, CERTIFICATE, A.C.P., L.L.A.,** and other examinations. Prospectus, with full particulars of Prizes ranging in value from 5s. to £5, will be sent on application. Intending students should join at once.

TERMS—S.K. (20 lessons) Elementary, 10s.; Advanced, 15s.

Address—Secretary, Manchester Corr. College, 58 Grosvenor Street, Manchester.

Just Published. Demy 8vo, **6s.**

"*Physical Training should be accompanied by instruction in the elementary rules of personal health in respect of food, drink, cleanliness, and fresh air; and by careful cultivation of a correct posture at writing and other lessons.*"—Code for 1905.

A TEXT-BOOK OF THE PRINCIPLES OF HYGIENE, BASED ON PHYSIOLOGY, FOR THE USE OF SCHOOL TEACHERS. By MRS. WATT SMYTH. Illustrated by Sixteen Special Plates and Numerous Diagrams in the Text.

This book supplies the information required by Teachers to enable them to carry out the advice in the chapter on "The School and the Health of the Scholars" in the *Suggestions for the Consideration of Teachers* issued by the Board of Education this year. In a special chapter on the Muscular System the action of the muscles of the body is explained in relation to the *Syllabus of Physical Exercises*, 1904.

LONDON: SIMPKIN MARSHALL & CO.

LANTERN SLIDES, BEST .... WET-PLATE

Geography, Science, Art, History, &c.

List Free from **WILSON, LOCHHEAD, ABERDEEN.**

NOW READY. ***Price 3d.; post free, 4d.***

The Practical Teacher's Art Monthly

FOR NOVEMBER

FULLY ILLUSTRATED CONTENTS.

SOME NOTABLE FRENCH ETCHINGS.
DAILY ROUNDS OF A DRAWING INSPECTOR.
PAGE FOR THE SENIORS: THE TIGER.
DRAWING COURSE FOR PRIMARY SCHOOLS.
CLAY MODELLING.
DRAWING IN SECONDARY SCHOOLS.
SCOTTISH ART TEACHERS' ASSOCIATION.
TOOLS AND HOW TO USE THEM.
FISH STUDIES.
STUDIES FROM NATURE: WILD ARUM.
HANDICRAFT. (From "Suggestions to Teachers.")
REVIEWS AND NOTICES.

Order from your Bookseller now, or send to

"The Practical Teacher" Office, Messrs. T. NELSON & SONS, 35 and 36 Paternoster Row, London, E.C.

Just Ready

TEACHER'S HANDBOOK to Stage V.

NELSON'S NEW DRAWING COURSE

By J. VAUGHAN

Director of Drawing and Manual Training, Glasgow School Board, late Art Master, School Board for London

Quarto. With Numerous Illustrations
Price 2s. 6d.

Prospectus of the full Course, including Handbooks, and Drawing Cards, post free on application

THOMAS NELSON & SONS
35 and 36 Paternoster Row, London, E.C.; Edinburgh, Dublin, and New York

NEW CODE CONTINUOUS READERS.

"In the higher classes one or two books should be read as a whole." THE NEW CODE, 1905.—*"English Language."*

NELSON'S

6d. Net. **SIXPENNY CLASSICS** **6d. Net.**

A New Series of the most popular reprints in LARGE, READABLE TYPE, with beautifully printed Frontispiece. Tastefully bound in CLOTH, with gilt lettering on back. Some of the volumes contain nearly 600 pages. All are UNABRIDGED.

A TALE OF TWO CITIES (DICKENS).
TOM BROWN'S SCHOOL DAYS (HUGHES).
THE DEERSLAYER (FENIMORE COOPER).
HENRY ESMOND (THACKERAY).
HYPATIA (KINGSLEY).
THE MILL ON THE FLOSS (GEORGE ELIOT).
ADAM BEDE (GEORGE ELIOT).

NELSON'S SUPPLEMENTARY READERS

PRICE **3d.** each, Paper

A SERIES OF SPECIALLY EDITED, SPECIALLY ANNOTATED, and SPECIALLY CHEAP Supplementary Readers for the Higher Standards and Evening Continuation Schools, designed to give a RANGE AND VARIETY OF GOOD READING.

16 Books now ready. List of Titles on Application.

PRICE **4d.** each, Cloth

☞ *Nelson's Educational Catalogue post free.*

T. NELSON & SONS, 35 & 36 Paternoster Row, London, E.C.; Edinburgh, Dublin, and New York

THE NORMAL

PRINCIPALS: PROFESSOR DENNEY AND MR. LYDDON-ROBERTS

CERTIFICATE

TESTIMONIALS FROM SOME MEDAL-WINNERS (CERTIFICATE, 1905)

(Testimonials from other Medal-Winners will be announced later)

See next page.

Miss Amy Downing *and* **Miss May Downing, Edenhurst, Woodbridge Road, Ipswich.** Sept. 20, 1905.—"We have both obtained a position in the *First Class*. My sister and I both feel it our duty to forward to you our thanks for the remarkably efficient tuition given by you during our course of study. We shall always appreciate the help you have given us." (*First Classes and Silver Medals.*)

Mr. C. Cope, Littleworth, Hednesford. Sept. 16, 1905.—"I am pleased to inform you I am placed in the *First Class*. Allow me to thank you for your valuable assistance, as my success is due in no small measure to yourselves." (*First Class and Silver Medal.*)

Miss B. E. Lock, 4 Highcliff Avenue, Southampton. Sept. 17, 1905.—"I have been successful in gaining a *First Class* in the Certificate Exam., and wish to thank you for the splendid tuition I have received. I shall do my best to persuade all 'Acting Teachers' I know to become 'Normal' correspondents." (*First Class and Silver Medal.*)

Miss C. Frazer, Dunmore Village, Larbert. Sept. 20, 1905.—"I have just heard that I have passed the Certificate Exam. in the *First Class*. I take this opportunity of expressing my very great appreciation of your tuition. Without it I am sure I should not have managed a First Class." (*First Class and Silver Medal.*)

Miss V. L. James, 39 Bruce Road, Stonebridge, Willesden. Sept. 18, 1905.—"I have heard this morning that I have passed the Certificate Exam. and am in the *First Class*. Many thanks for your help." (*First Class and Silver Medal.*)

Miss J. D. Mitchell, Laurel Bank, Cupar. Sept. 6, 1905.—"I have much pleasure in informing you that I have passed *First Class*. Allow me to express my best thanks for the very valuable help you gave me in my Certificate studies. I shall certainly recommend your Classes. Your beautiful medal has safely arrived. I shall value it very highly." (*First Class and Silver Medal.*)

Miss B. Hothersall, 16 Swinley Road, Wigan. Sept. 18, 1905.—"I am very pleased to tell you that I have been successful at the Certificate Examination, and have obtained a *First Class*. Though I was a member of your class for a short time only, I derived the greatest benefit from your notes, and shall recommend your tuition to all students with whom I come in contact." (*First Class and Silver Medal.*)

Miss C. L. Powell, 10 Canning Street, Waterloo, Liverpool. Sept. 16, 1905.—"I am placed in the *First Class* at the Recent Certificate Exam. I must not omit to thank you for the benefits I received from your tuition, which I shall not fail to recommend." (*First Class and Sliver Medal.*)

Miss M. Tweddill, 16 Purbeck Place, Littlehampton, Sussex. Sept. 16, 1905.—"As I have been under your tuition I thought you would like to know I have obtained a *First Class* in the Certificate Exam." (*First Class and Silver Medal.*)

Mr. H. W. Jones, The Post Office, Bersham, Wrexham. Sept. 16, 1905.—"The result of the Certificate Exam. came to hand this morning, and I am placed in the *First Class*. I take this opportunity to offer you my sincere thanks for the attention you gave me. Your notes and solutions were excellent; but for them I am certain I should not have got the position I have. I worked hard from February, and, with only five months under you, the result is quite sufficient to justify my calling your methods excellent." (*First Class and Silver Medal.*)

Miss K. J. Barrett, 16 Langley Street, Luton. Sept. 16, 1905.—"Kindly accept my most hearty thanks for your invaluable assistance in helping me to obtain a *First* at Certificate, 1905." (*First Class and Silver Medal.*)

Mr. F. R. Glanville, 23 Spencer Avenue, Keyham, Devonport. Sept. 17, 1905.—"I have much pleasure in informing you that I have obtained a *First Class* at the Certificate Examination. I found the revision course which I took with you of great service to me, and it was in no small degree contributory to my success." (*First Class and Silver Medal.*)

Miss J. Maddox, 8 Russell Street, Dresden, Stoke-on-Trent. Sept. 21, 1905.—"I am pleased to inform you that I have passed the Certificate Exam. in the *First Class*. Thanking you for your assistance and good notes." (*First Class and Silver Medal.*)

Miss F. Holland, 25 Ashbourne Grove, Halifax, Yorks. Sept. 16, 1905.—"I am pleased to say that I have been placed in the *First Class* at the recent Certificate Exam. I am sure that in a great measure my success has been due to your excellent system of tuition. The notes, questions, and model answers supplied by you were all that could be desired." (*First Class and Silver Medal.*)

Mr. R. Downing, 38 Lorne Street, Burslem. Sept. 21, 1905.—"I have passed the Certificate Exam. in the *First Class*. Accept my best thanks for the valuable assistance afforded by your papers in Mathematics." (*First Class and Silver Medal.*)

Miss A. E. McCreath, Yewtree, Creebridge. Sept. 18, 1905.—"I have much pleasure in informing you that I have been successful. I obtained a *First Class* at the recent Certificate Exam. Thanking you for your valuable tuition." (*First Class and Silver Medal.*)

Miss M. E. Carey, 27 Castle Street, Tiverton, Devon. Sept. 18, 1905.—"I have much pleasure in telling you that I have obtained a *First Class* in the Certificate Exam. Please accept my sincere thanks for the most helpful papers and notes you sent me, which I feel sure were largely instrumental in bringing about such a result." (*First Class and Silver Medal.*)

Miss W. E. Timmins, Urmston, Springfield, Moseley. Sept. 16, 1905.—"I beg to inform you that I have obtained a *First Class* in the Certificate Exam. Thanking you for your able tuition." (*First Class and Silver Medal.*)

Miss E. T. Craig, 20 Bedford Road, Bootle. Sept. 18, 1905.—"I am pleased to inform you that I have obtained a *First Class* in the Certificate Examination. Thanking you for your help." (*First Class and Silver Medal.*)

Mr. P. Spencer, Oak Lea, Writtle Road, Chelmsford. Sept. 17, 1905.—"You will be pleased to hear that I have secured a *First Class*. As I attribute my success largely to your excellent tuition and splendid text-books, I feel I must write and thank you." (*First Class and Silver Medal.*)

Miss E. A. Lloyd, Halford Street, Thrapston. Sept. 16, 1905.—"Obtained position in the *First Class*." (*First Class and Silver Medal.*)

Mr. W. Turner, 77 Lovely Lane, Warrington. Sept. 16, 1905.—"Owing to your excellent tuition I have got a *First Class*. I cannot say how helpful I found your notes. I am sure I owe my success to the 'Normal.'" (*First Class and Silver Medal.*)

Mr. C. L. Moseley, The Firs, Coalpit Heath, Bristol. Sept. 20, 1905.—"I am pleased to tell you I obtained a *First Class* in the 1905 Certificate Exam. Your 'Self-Preparation Course' helped me greatly, together with your splendid text-books." (*First Class and Silver Medal.*)

THE NORMAL

PRINCIPALS: PROFESSOR DENNEY AND MR. LYDDON-ROBERTS

CERTIFICATE

TESTIMONIALS FROM SOME MEDAL-WINNERS (CERTIFICATE, 1905)

(Testimonials from other Medal-Winners will be announced later)

See preceding page.

Mr. W. Lake, Schoolhouse, Cranbrook. Sept. 17, 1905.—"I have obtained a position in the *First Class* at the recent Certificate Exam. This result I attribute mainly to the excellent tuition which I received from the Normal Corr. College. Throughout the whole course I received nothing but the greatest consideration and attention." (*First Class and Silver Medal.*)

Mrs. A. Bransby, Ash Grove, North Walsham Road, Norwich. Sept. 16, 1905.—"I have much pleasure in informing you that I have obtained a place in the *First Class*, and in thanking you for the benefit I derived from your course of work. I feel confident that any student who conscientiously follows your full scheme is sure to obtain a good place." (*First Class and Silver Medal.*)

Mr. H. Isaacson, Wisbech Road, March. Sept. 20, 1905.—"I am happy to say that in the recent Certificate Exam. I passed in the *First Class*, which result I feel sure is largely due to the valuable help I received from your tuition and publications." (*First Class and Silver Medal.*)

Mr. H. Tyler, 25 Prince's Street, Sutton Bridge, Wisbech. Sept. 21, 1905.—"I am pleased to apprise you of the fact that I passed in the *First Class*. Thanking you for your tuition and kind interest." (*First Class and Silver Medal.*)

Miss H. Binns, 26 Perry Street, Portsmouth. Sept. 17, 1905.—"I have great pleasure in telling you that I received the result of the Certificate Exam., and that I have passed in the *First Class*. I take this opportunity of thanking you for your excellent tuition and careful preparation, to which I owe my success." (*First Class and Silver Medal.*)

Miss M. W. Smith, Tyne Street, Winlaton. Sept. 16, 1905.—"I have much pleasure in informing you that I have passed the Certificate Exam. in the *First Class*. I must thank you for the help I have received from your notes and the work sent. The Teaching Notes I must specially mention, as at least three of the questions set at the Exam. were fully dealt with in your notes." (*First Class and Silver Medal.*)

Miss B. Tozer, Varaville, 6 Endsleigh Gardens, Ilford. Sept. 16, 1905.—"I have succeeded in obtaining a *First Class* at the recent Certificate Exam. I must thank you for the splendid tuition I have received from your College. The notes were excellent." (*First Class and Silver Medal.*)

Miss D. M. Nicholl, 6 Clive Place, St. Margaret's Road, Bradford. Sept. 18, 1905.—"I am very pleased to say that I heard yesterday that I had been placed in the *First Class* of the Certificate List." (*First Class and Silver Medal.*)

Mr. C. P. Lewis, Ewell, Surrey. Sept. 16, 1905.—"I am exceedingly pleased to tell you that I have obtained a *First Class* at the Certificate Examination. May I take this opportunity of saying how much I thought of your tutorial papers, which so greatly contributed to my success?" (*First Class and Silver Medal.*)

Miss L. Beach, 50 Junction Street, Langley, Birmingham. Sept. 16, 1905.—"I have much pleasure in informing you that I have a *First Class* at the Certificate Examination. I feel sure that I owe my success to your excellent tuition." (*First Class and Silver Medal.*)

Mr. W. Dow, The White House, Springburn. Sept. 15, 1905.—"I took a short course at your College and passed in the *First Class* at the recent Certificate Examination. Indeed, the work I did under you was the only preparation I had, as I had not touched the work before I started." (*First Class and Silver Medal.*)

Mr. J. Pickett, 60 Mill Moss Road, Sutton, St. Helens. Sept. 16, 1905.—"Have obtained a *First Class* in the recent Certificate Exam. There is not the least doubt but that my success was in a large measure due to your splendid tuition." (*First Class and Silver Medal.*)

Miss F. Carter, George Street, Kirkburton, Huddersfield. Sept. 22, 1905.—"I have pleasure to inform you that I have passed the Certificate Exam. in the *First Class*. Will you accept my warmest thanks for your help during the time I corresponded with you?" (*First Class and Silver Medal.*)

Miss F. A. Felstead, Stanstead Abbot, Herts. Sept. 22, 1905.—"I have heard this morning that I have obtained a *First Class* at the recent Certificate Exam." (*First Class and Silver Medal.*)

Miss J. Millward, 33 Grantly Street, Grantham. Sept. 21, 1905.—"You will be pleased to hear that I am placed in the *First Class* at the Certificate Exam. I wish to thank you very much for the help you gave me with my studies. The notes and papers were most excellent, and my work was always corrected and returned promptly." (*First Class and Silver Medal.*)

Miss B. M. McKenzie, 10 Fern Gardens, Fern Street, Hull. Sept. 17, 1905.—"I have passed in the *First Class*, and I take this opportunity of expressing my gratitude for the excellent tuition I received during the time I was a member of your class. Besides the valuable notes and directions, I have found one of the most helpful features of your course to be the very moderate amount of written work required. This is a great consideration for Acting Teachers, who have so little time for study." (*First Class and Silver Medal.*)

Mr. W. Frankland, 13 Windermere Road, Gt. Horton, Bradford. Sept. 22, 1905.—"Have obtained a '*First*' in this year's Certificate Exam. Many thanks for your invaluable help." (*First Class and Silver Medal.*)

Mr. Wm. Gould, 114 Church Street, Wolverton, Bucks. Sept. 22, 1905.—"Am glad to inform you that in the recent Certificate Exam. I gained a *First Class*." (*First Class and Silver Medal.*)

Miss E. M. Daniels, Shootend, Alderbury, Salisbury. Sept. 22, 1905.—"I am glad to inform you that I have obtained a *First Class* at the Certificate Exam. With many thanks for your valuable assistance." (*First Class and Silver Medal.*)

Miss F. M. Coleman, 30 Victoria Street, Norwich. Sept. 22, 1905.—"Am pleased to tell you I was successful at the last Certificate Exam. and obtained a *First Class*." (*First Class and Silver Medal.*)

Miss C. E. Adams, 93 Oswald Road, Southall, Middlesex. Sept. 22, 1905.—"I was so fortunate as to gain a *First Class* in the recent Certificate Exam. Thank you very much." (*First Class and Silver Medal.*)

Mr. W. F. Gray, 11 Albert Terrace, Beverley. Sept. 22, 1905.—"I was fortunate enough to obtain a *First Class* at the recent Certificate Exam. Thanks for your help." (*First Class and Silver Medal.*)

Mr. A. Traice, 55 Douglas Road, Handsworth, Staffs. Sept. 22, 1905.—"As one of your former students it gives me much pleasure in stating that I gained a *First Class* in the recent Certificate Examination." (*First Class and Silver Medal.*)

Miss M. Bailey, Thurstonland, near Huddersfield. Sept. 23, 1905.—"I have obtained a place in the *First Class* at the recent Certificate Exam. Allow me to say that during the time I was under your tuition I was perfectly satisfied with the notes and the careful marking of the papers." (*First Class and Silver Medal.*)

NORMAL CORRESPONDENCE COLLEGE: 110 AVONDALE SQUARE, S.E.; and 47 MELFORD ROAD, DULWICH, S.E.

COUPON
PRACTICAL TEACHER
November 1905

PRINTED AND PUBLISHED BY THOMAS NELSON & SONS, PROPRIETORS, AT THE OFFICE OF "THE PRACTICAL TEACHER," 35 & 36 PATERNOSTER ROW, LONDON, E.C.